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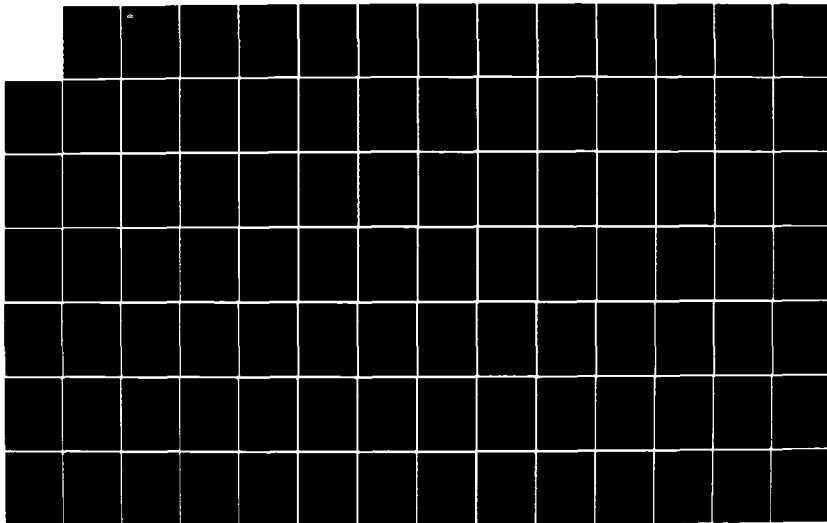
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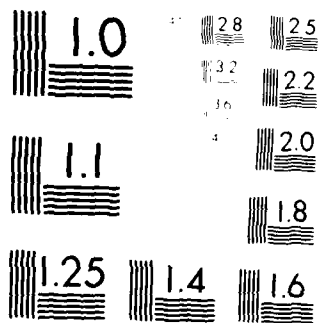
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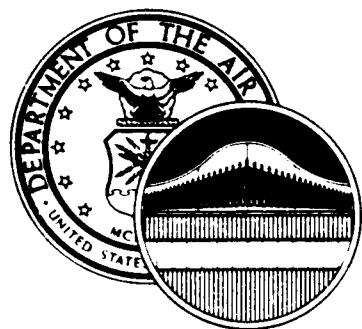
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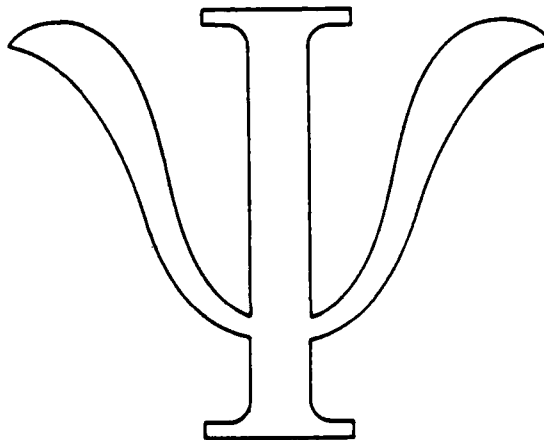


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UNITED STATES AIR FORCE

# OCCUPATIONAL SURVEY REPORT



BEHAVIORAL SCIENTISTS (AFSC 2675), SCIENTIFIC  
MANAGERS (AFSC 2616), AND RELATED SPECIALTIES

by

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AFPT 90-26X-370

December 1984

**OCCUPATIONAL ANALYSIS PROGRAM  
USAF OCCUPATIONAL MEASUREMENT CENTER  
AIR TRAINING COMMAND  
RANDOLPH AFB, TEXAS 78150**

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## PREFACE

This report presents the results of a detailed Air Force occupational survey of Behavioral Scientists (AFS 2675), selected Scientific Managers (AFS 2616), and a small sampling of related specialties and coworker civilian (GS-180 and GS-222) jobs. The project was undertaken by the USAF Occupational Analysis Program as a part-time project, and repeated data collections were made in 1981 and early 1984 to provide data to evaluate proposed changes to the Behavioral Scientist specialty description (AFR 36-1).

Authority for conducting occupational surveys is contained in AFR 35-2 and ATCR 52-22. Specific authority for this survey was granted by HQ AFMPC/MPCMC.

The survey instrument was developed by Captain Linda Wiekhorst, Mr James Keeth, and Lieutenant Colonel Jimmy L. Mitchell, through review of AFHRL research position descriptions and interviews with about 33 percent of career field incumbents. The survey data were analyzed and the report prepared by Lieutenant Colonel Mitchell and Mr Keeth. Computer programming support was provided by Ms Vera Frechel and Ms Elena J. Weber.

This report has been reviewed and approved. Copies of the report are distributed to AFMPC, Air Staff sections, and other interested agencies and individuals (see distribution list). Additional copies are available upon request to the USAF Occupational Measurement Center/OMYX, Randolph Air Force Base, Texas 78150-5000.

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## SUMMARY OF RESULTS

1. Survey Coverage: An occupational survey of Air Force Behavioral Scientists (AFSC 2675) and a selected sample of Scientific Managers (AFSC 2616) was conducted to develop information to evaluate proposed changes to the specialty description (AFR 36-1) and to evaluate job attitudes of job incumbents. Ninety percent of all Behavioral Scientists and 15 percent of all Scientific Managers are included in the study, as well as a sampling of incumbents in related occupations.
2. Specialty Jobs: The behavioral science field was found to be very diverse, with at least 12 major types of jobs identified. The Human Factors Engineering jobs appear as a distinct subspecialization within the career field, with little overlap with other functions. Other very distinct jobs include Academy Instructors, Occupational Analysts, WAPS Test Development Psychologists, and Research Scientists.
3. Career Progression: Beyond the very specialized entry-level jobs, Air Force Behavioral Scientists and Scientific Managers transition into program management and staff plans functions. Most senior incumbents are also involved in personnel selection and management. There is no clear separation between senior 2675 and 2616 positions, since members holding both AFSCs appear in most advanced jobs.
4. AFR 36-1 Specialty Descriptions: The proposed changes to the specialty description for AFSC 2675 appear realistic. Establishment of a shredout for the Human Factors area appears justified and the elimination of the requirement for a master's degree is consistent with actual practice over the last decade. The change will enhance recruiting for this field and facilitate career field management. The present AFR 36-1 description for Scientific Managers (2616) does not emphasize personnel management although this is the most time-consuming aspect of the job. The present structure merges the Behavioral Scientist (267X) with unrelated scientific areas (Chemist, Metallurgist, Nuclear Research, etc.) which results in a very general AFR 36-1 description. An alternative specialty structure is suggested which would identify Behavioral Science Managers and clarify 267X career progression.
5. Job Attitudes: Behavioral Scientists have very positive attitudes toward their work; their attitudes are comparable to most other Air Force officers. More Behavioral Scientists indicate they plan a full military career than is the case for Air Force officers in general. Some Human Factors Engineering Scientists indicate dissatisfaction with the organizational climate of their units, but the specific causes of this dissatisfaction are not known.
6. Career Field Dynamics: Comparison of the 1984 data with survey results from 1981 indicate a number of changes in the jobs and attitudes of the specialty in the last 3 years. Significant improvement was seen in the job attitudes of some job groups. Further changes are expected as the Human Factors area and other functions expand during the next few years as programmed.



7. Recommendations: The revised AFR 36-1 should be approved for April 1985 implementation. Some type of revalidation of advanced degree requirements will be needed. Other problems, such as functional managership, possible alternative staff-level structure, and dissatisfaction with the organizational climate in some job groups, need to be resolved. Recommend a U&T Workshop be convened for the Behavioral Scientist specialty in early 1985.

OCCUPATIONAL SURVEY REPORT  
AIR FORCE BEHAVIORAL SCIENTISTS (AFSC 267X)  
AND RELATED SPECIALTIES

INTRODUCTION

Behavioral Scientists in the Air Force, as described in AFR 36-1, conduct research to identify, quantify, predict, and control behavior of humans and variables affecting behavior. They may also experiment with animals in comparative research and study human behavior as manifested either individually or in groups, and in interaction with machines. Major duties and responsibilities of the 267X Officer Specialty include: a. Conducts research; b. Conducts applied research; c. Monitors and performs liaison and consultative activities; and d. Manages behavioral sciences research and development. Authorized grade spread is second lieutenant through lieutenant colonel. Related DOD Occupational Group is 5E (see Appendix A).

At the senior staff level, the Behavioral Scientist specialty is grouped with other scientific specialties into the Scientific Manager utilization field (AFSC 2616). The other specialties included in the Scientific Manager area are:

- 2625 - Computer Research Officer
- 2635 - Physicist
- 2645 - Chemical Research Officer
- 2655 - Metallurgist
- 2665 - Nuclear Research Officer
- 2685 - Scientific Analyst

Scientific Managers direct, formulate, manage, evaluate, and coordinate research and development programs and projects; act as executive managers of large and diverse scientific organizations; and supervise scientific research activities. Authorized grade spread for AFSC 2616 is major through colonel.

Currently, there is no entry-level training program for assessments into either the 267X or 261X specialties, although an AFIT short course is under development for those Behavioral Scientists slated for Human Factors assignments (personal communications, HQ AFSC Human Factors Monitor, 1984). A master's degree in Human Engineering or Psychology is presently "mandatory" for entry into the 267X specialty and a master's degree in science or engineering or a bachelor's degree in science or engineering with a master's degree in Research and Development Management or Business Administration is "desirable" for award of AFSC 2616.

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## History and Background

The USAF has a long history of successful behavioral science research. A number of lines of research developed during and following World War II, including pilot selection, equipment design and human-machine interactions (Human Factors Psychology or Engineering), animal research in space (Experimental Psychology), and various personnel and training research programs (Personnel Tests and Measurements). In 1954, the USAF classification system recognized four types of Behavioral Scientists: AFSC 8696, R&D Officer; AFSC 9954, Human Resources Staff Assistant; AFSC 8836, Human Resources Research Officer; and AFSC 8816, Human Resources Staff Officer.\* Through the years, these specialties have changed a number of times both in terms of AFSC number and title (see Figure 1). By 1961, these specialties had become:

- AFSC 1896F - Human Performance Engineer
- AFSC 2969E - Experimental Psychologist
- AFSC 2696F - Personnel Measurement Psychologist
- AFSC 2616 - Staff Scientist

In 1964, these various specialties were consolidated into one utilization field and became the Behavioral Scientist specialty (AFSC 2675), with shredouts A, B, and C for the various psychology subspecializations. A fourth shredout, Z, was also added to include other social scientists (anthropology, sociology, etc.). In 1967, some Human Factors Psychologists were moved to AFSC 2955, Personnel Subsystem Officer, which later became AFSC 2724. In 1976, the 2675 shredouts were dropped to provide more flexible assignments. Since that time, there have been a number of suggestions made to return to a shredout structure or to transfer some groups, particularly the remaining Human Factors Psychologists, to some other Air Force specialty. Currently, a draft revision to AFM 36-1 which would reestablish the A shredout for the Human Factors Psychologists, revise the description of the specialty, and modify the educational requirements for entry into the field is in major command coordination (see Appendix B).

Throughout this period, there have been some suggestions that military psychologists were difficult to attract and retain. A 1968 report by the ad hoc committee on career status of military psychologists (Division 19 of the American Psychological Association) concluded that pay and allowances of uniformed psychologists compared "very unfavorably" with their civilian peers (Hedlund et al 1968). Salary, however, was not the only concern since job satisfaction was also thought to be impacted by the "opportunity for professional or scientific development," "more personal control over assignments," and by "professional or scientific isolation" (Ibid: 121). The Division 19

\* Information taken from the Air Force Specialty History - Officer (AFS-HIS) file, Technical Services Division, Air Force Human Resources Laboratory.

report was followed in 1970 by a very critical report published in the American Psychologist critiquing Air Force salaries and utilization policies (Jacoby 1970). This author recommended entry at the captain level for new military psychologists holding doctorates, professional pay comparable to physicians or flight pay, preinduction counseling on job opportunities, and a systematic program for professional interaction through periodic conferences (Ibid: 386). Jacoby also challenged the Military Psychology Division of the APA to take a more active role in lobbying for proper treatment of psychologists and dissemination of information about military psychology jobs (Ibid: 387).

With this background in mind, an occupational survey of the Air Force Behavioral Scientist specialty was suggested by the USAFOMC staff in 1978. This was envisioned as a part-time project which could be accomplished with minimal expense, since the relatively small utilization field population would not justify a normal priority project. The USAF Classification Branch of the Air Force Manpower and Personnel Center (AFMPC) concurred with this approach and approved the project through assignment of an AFPT survey control number (AFPT 90-26X-370).

### Inventory Development

As a starting point in developing a task list for the Behavioral Scientist (AFSC 267X) specialty, Air Force personnel documents, such as AFR 36-1, Officer Specialty Descriptions, were screened to identify basic duties and responsibilities of USAF Behavioral Scientists. In addition, a set of special job descriptions for 267X officers were recovered from the AFHRL historical files. In 1974-75, AFHRL had conducted a special study of all officer specialties by collecting narrative job descriptions from a representative sample of position incumbents. Twenty-two Behavioral Scientist position descriptions were located in this file and served as a foundation for preliminary task list development. Similar forms were reproduced by USAFOMC and mailed to about 30 Behavioral Scientists to update position descriptions and capture recently developed jobs. As the opportunity presented itself during trips for other purposes (in the normal pursuit of the occupational survey program), interviews were conducted with 33 Behavioral Scientists at Wright-Patterson AFB, the USAF Academy, Lowry AFB, Keesler AFB, Norton AFB, and Randolph AFB. About one-third of the members of the specialty were contacted either by mail or through personal interviews.

A relatively short task list containing 330 task statements grouped under 17 major duty headings was developed. Because of the relatively small population (about 140 officer positions) and diverse number of jobs, the task list was written at a more general level of specificity than is normally the case. With small fields such as this, only a few tasks per known job group should normally differentiate clusters and job types. Thus, an overly long and detailed task listing was considered unnecessary.

The USAF job inventory was organized functionally. The duties of the task inventory are shown in Figure 2, along with the number of tasks included under each duty heading. Note that the General Command Functions

(including tasks such as "conduct Commander's Call," etc.) which are normally performed by unit commanders are listed first, while the more technical, entry-level functions are placed toward the end of the inventory (Duties F through Q).

A fairly extensive background section was also developed for the USAF job inventory, ranging from personal identification, education level, academic specialization, etc., to standard job interest questions normally included in all job inventories (see Figure 3). These types of data facilitate the identification of job groups during analysis and permit a more detailed look at potential problem areas within the utilization field. Such data may be displayed by grade, job type, or by organization to highlight differences in groups or to identify particular jobs or areas where morale may be an issue. Finally, the USAF job inventory also included items relating to the individual's future plans to remain in the specialty, move to a related specialty, move out of the behavioral science area, or leave the Air Force.

The final job inventory was validated through comprehensive reviews by senior Behavioral Scientists at AFMPC, AFHRL, and USAFOMC. In addition, the AFMPC Career Development Manager also reviewed and approved the instrument.

FIGURE 1

HISTORY OF THE AIR FORCE BEHAVIORAL SCIENTIST UTILIZATION FIELD

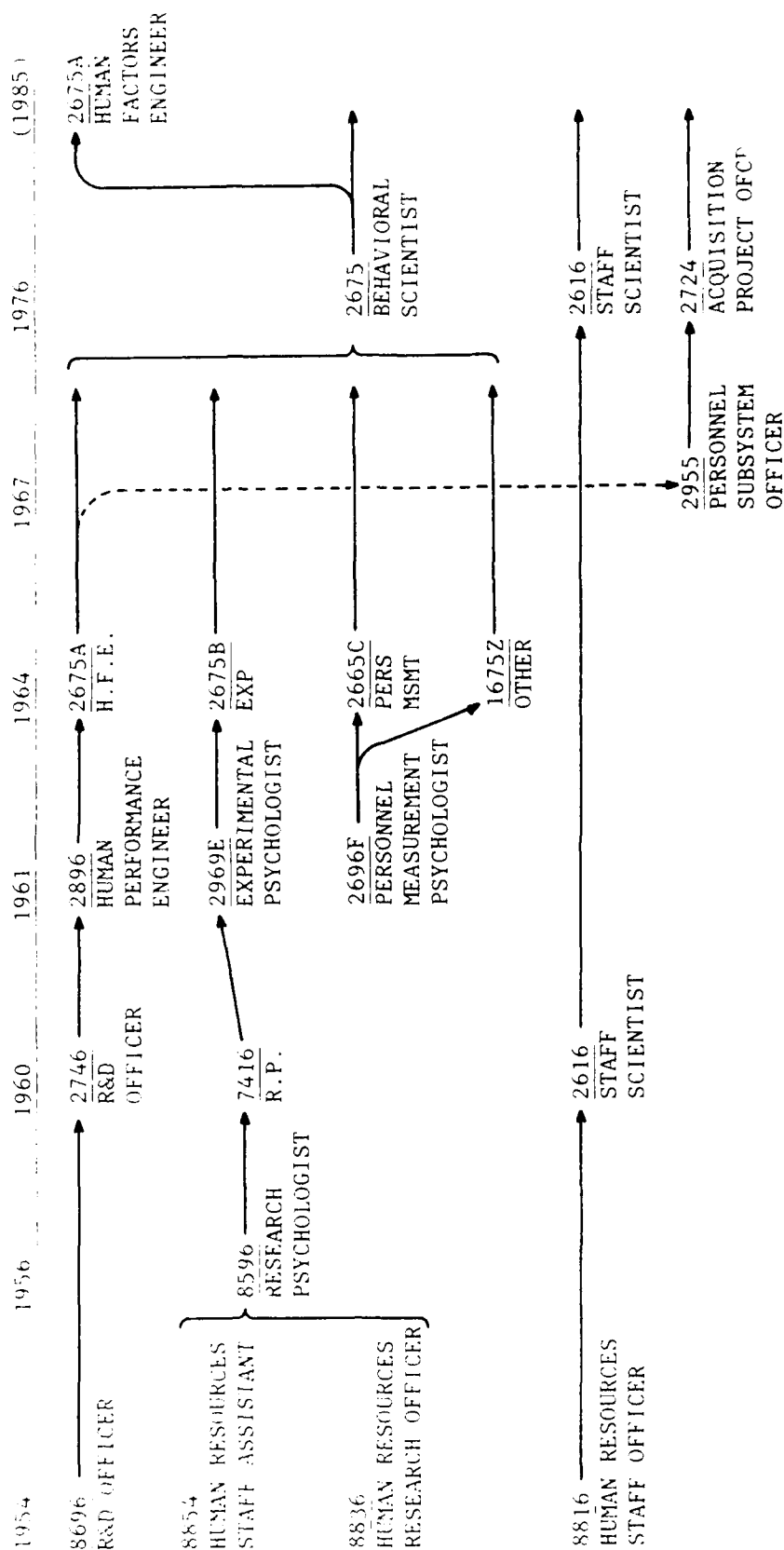


FIGURE 2

AFS 26XX USAF JOB INVENTORY DUTY AREAS

<u>DUTY</u>	<u>NUMBER OF TASKS</u>
A GENERAL COMMAND FUNCTIONS	17
B SUPERVISORY FUNCTIONS	42
C ADMINISTRATIVE FUNCTIONS	17
D GENERAL FUNCTIONS	22
E PROFESSIONAL DEVELOPMENT FUNCTIONS	14
F CONSULTANT FUNCTIONS	14
G LIAISON FUNCTIONS	9
H CONTRACT MONITORING FUNCTIONS	12
I COUNSELING FUNCTIONS	12
J RESEARCH FUNCTIONS	22
K APPLICATIONS OF RESEARCH	20
L MANAGING RESEARCH OR APPLICATIONS PROGRAMS	14
M ORGANIZATIONAL IMPROVEMENT FUNCTIONS	11
N ACADEMIC INSTRUCTOR FUNCTIONS	16
O HUMAN FACTOR ENGINEERING (HFE) FUNCTIONS	35
P PROMOTION TEST CONSTRUCTION FUNCTIONS	25
Q OCCUPATIONAL ANALYSIS FUNCTIONS	28

FIGURE 3

26XX BACKGROUND SECTION

I. IDENTIFICATION:

NAME, SSAN, TEL. NO., DOB, SEX, GRADE, MAJOR COMMAND, ORGANIZATION, JOB TITLE, AFIT SCHOOL ATTENDED, AFSCs, TIME IN JOB, TIME IN AFSC, TAFMS, ENLISTED TIME, COMMISSIONED TIME, NO. SUPERVISED, SOURCE OF COMMISSION, ORGANIZATIONAL LEVEL, SHREDOUT, SEI

II. EDUCATIONAL DATA OF POSITION:

REQUIREMENT OF POSITION, SHOULD REQUIRE, ACADEMIC SPECIALTY OF POSITION, ADDITIONAL ACADEMIC CODE

III. JOB REQUIREMENTS:

TDY, SUPERVISOR, TYPE OF POSITION, INTERACTIONS WITH VARIOUS CATEGORIES AND LEVELS

IV. EDUCATION QUALIFICATIONS OF INCUMBENT:

DEGREE LEVEL, HOW EARNED, SPECIALIZATION, PROFESSIONAL ORGANIZATION, PME

V. JOB ATTITUDES:

CAREER PLANS, ASPIRATIONS, ORGANIZATIONAL CLIMATE, JOB INTEREST AND SATISFACTION



## METHODOLOGY

The 267X Job Inventory (AFPT 90-26X-370) was initially administered to approximately 200 Behavioral Scientists in 1981, with the intent to identify the various jobs being performed, job attitudes, and problem areas. Preliminary results of this survey administration were briefed at several professional meetings (Military Testing Association, Psychology in the DOD Symposium) and to career field managers at the Air Force Manpower and Personnel Center (see Mitchell, Keeth, and Weikhorst 1982, 1983). Subsequently, because of the press of other business, no formal Occupational Survey Report (OSR) was issued.

In late 1983, a number of proposals were underway for changes in the specialty, and as some of these were being initially staffed at AFMPC, the Classification Branch asked for new data. A second field administration was undertaken in early 1984 to collect data with which AFMPC could evaluate the proposed changes to the specialty (see Appendix B). This repeated collection of data using the same USAF job inventory provides an unexpected opportunity to compare jobs and job attitudes across time (between 1981 and 1984). Thus, the following sections will first discuss the second survey administration in 1984, followed by a comparison with the 1981 results in terms of jobs performed and job attitudes. (For results of the 1981 survey, see Appendix C.)

### 1984 Sample

One of the major deficiencies in the 1981 sample was the very small sample of Scientific Managers (AFS 2611/2616) included in the study (N=3). To develop a more comprehensive sample for the 1984 field administration, a mailing list was generated from the UOR file at AFHRL which included all 256 officers with a duty AFSC of 2611 or 2616. Many of these officers are in nonbehavioral science staff positions (physicists, chemists, nuclear research, etc.); most of these individuals were screened out of the sample on the basis of their current organization. Several non-Behavioral Scientists were included, however, to compare the content of their jobs to behavioral science Scientific Managers. Fifty-four Scientific Managers were considered eligible either as a behavioral science 261X officer or as a comparative sample. Of this number, only 37 replied to the questionnaire. A number of those specializing in other types of R&D efforts returned the survey booklet blank with a note that it did not cover their current job.

A computer listing of all AFSC 2671/2675 officers yielded 152 names which included those currently in on-duty educational programs under the Air Force Institute of Technology. Currently, there are 143 authorizations for this specialty in the Air Force (but this figure excludes those in school who are carried under student authorizations). USAF job inventories were mailed to all 152 individuals through local CBPO Survey Control Officers. Field administration was closed in August upon receipt of the 124th inventory from a 267X officer.

Table 1 displays the major command of assignment of both assigned strength and those in the survey sample. Note that 90 percent of those AFSC 267X officers eligible for the survey responded, an exceptionally good return rate. The 124 officers in the final sample represent 82 percent of the assigned strength of the specialty. The return rate for Scientific Managers (AFSC 2611/2616) was 70 percent of those eligible, representing 14 percent of all 261X officers assigned. The lower return rate (70 versus 90 percent) for 261X officers is, in part, a function of including nonbehavioral science 261X officers in the study for comparative purposes. As noted earlier, some of these senior officers declined to participate. The return among 261X officers with a behavioral science background was about 85 percent, which is quite comparable to the Behavioral Scientist sample.

In addition to Behavioral Scientists and Scientific Managers, members of several related AFSCs were also given the opportunity to participate (see Table 2). These individuals included AFSCs 2724, Research and Development Officers (who have behavioral science backgrounds and perform related jobs); 2716, R&D Managers; 7516, Education and Training Staff Officer; 2685, Systems Analyst (assigned to an occupational analysis position); and two enlisted specialties where a Chief Master Sergeant and Senior Master Sergeant are assigned to company-grade-equivalent positions. In addition, civilian employees holding a GS-180, Personnel Psychologist, or GS-222, Occupational Analyst, series assigned to the same organizations were given an opportunity to participate in the study on a voluntary basis (to compare their jobs and job attitudes with their military counterparts). They range in grade from GS-9 to GM-15 (see Table 3). A total of 35 DAF civilian employees assigned primary in Air Force Systems Command (AFHRL) and Air Training Command (USAFOMC) chose to participate.

With the other military and the 35 DAF civilian sample, the total number of participants for this study was 206. This type of heterogeneous sample provides a comprehensive look at Behavioral Scientist and Scientific Manager's jobs, as well as permitting the comparison of such jobs with those of their coworkers in the same or related organizations. While this is an unusual sampling strategy, it provides a very comprehensive basis for analyzing both the similarities and the differences among related Air Force jobs.

### Data Analysis

Time Spent Ratings. Each incumbent was asked to rate the relative amount of time spent on the tasks perform. The ratings were made by survey respondents on each of the tasks they performed in their present jobs, using the following time spent scale:

<u>RATING SCALE</u>	<u>AMOUNT OF TIME SPENT</u>
1	Very Small Amount
2	Much Below Average
3	Below Average
4	Slightly Below Average

5	About Average
6	Slight Above Average
7	Above Average
8	Much Above Average
9	Very Large Amount

As a first step in the analysis of occupational survey data, each respondent's time-spent ratings were converted to percent-of-time ratings. To accomplish this conversion, all of an individual's relative-time-spent ratings were summed, with the total representing all of the individual's job. Each separate task rating was then divided by the total and the quotient multiplied by 100 to provide the relative-percent-time ratings for each task.

For the purpose of organizing individual jobs into similar types of work, an automated job clustering program was used. This hierarchical grouping program is a basic part of the Comprehensive Occupational Data Analysis Program (CODAP) package for job analysis. Each individual job description in the sample was compared to every other job description in terms of the relative amount of time spent on each task in the job inventory. On the first iteration, the clustering program is designed to locate the two job descriptions with the most similar ratings. These two job descriptions are combined to form a composite. In successive stages, individual job descriptions of other respondents were added to the original composite or new groups were formed, based only on the similarities in tasks performed and time spent. This procedure was continued until all individuals and groups were combined to form a single composite representing the total survey sample.

The analysis of the clustering data allowed the identification of: (a) the number and characteristics of the different jobs which existed within the behavioral science area; (b) the tasks which tended to be performed together by the same respondents; and (c) task and incumbent characteristics which may be peculiar to specific functional requirements as they existed at the time of the survey.

TABLE 1

1984 BEHAVIORAL SCIENTIST AND SCIENTIFIC MANAGER  
SAMPLE: DISTRIBUTION BY MAJOR COMMAND

	267X		261X	
	PERCENT OF ASSIGNED*	PERCENT OF SAMPLE	PERCENT OF ELIGIBLE**	PERCENT OF SAMPLE
ATC	34	35	7	10
AFSC	24	28	57	65
USAFA	20	18	2	0
AU (Includes AFIT students)	13	9	6	5
HQ USAF	1	2	4	0
OTHER (DOD, AFMPC, TAC, AFOTEC, etc.)	<u>8</u>	<u>8</u>	<u>24</u>	<u>20</u>
	100	100	100	100

	<u>267X</u>	<u>261X</u>
Total Assigned -	152*	256*
Total Eligible -	138	54**
Final Sample -	125	37
Percent of Assigned -	82%	14%
Percent of Eligible -	90%	70%

\* Assigned as of 1 Jan 84

\*\* Selected sample (those with behavioral science background plus a group  
of comparable staff scientists with other backgrounds)

TABLE 2

1984 OTHER SPECIALTIES OR SERIES IN SAMPLE  
DISTRIBUTION BY COMMAND

<u>MAJCOM</u>	<u>AFSC OR SERIES</u>				
	<u>272X</u>	<u>2716</u>	<u>OTHER*</u>	<u>GS-180</u>	<u>GS-222</u>
ATC	0	0	4	11	11
AFSC	2	1	0	13	0
USAFA	<u>0</u>	<u>0</u>	<u>1</u>	0	0
TOTAL	3	1	5	24	11

SUMMARY

261X	=	37
267X	=	125
272X	=	3
2716	=	1
Other*	=	5
GS-180	=	24
GS-222	=	<u>11</u>
TOTAL SAMPLE	=	206

\* Includes 7516, 2685, and enlisted AFSCs

TABLE 3  
DISTRIBUTION OF DAF CIVILIANS BY SERIES AND GRADE

<u>GRADE</u>	<u>SERIES</u>	
	<u>PERSONNEL PSYCH (GS-180)</u>	<u>OCCUP ANALYST (GS-222)</u>
GS-9	6	1
GS-11	3	1
GS-12	6	8
GS-13	3	1
GS-14	4	0
GS-15	2	0

## 1984 BEHAVIORAL SCIENTIST JOBS

### Overview

There are very few tasks performed in common by at least 60 percent of those surveyed. These few "common" tasks involve such things as:

	Percent Performing
Prepare or proofread correspondence, such as memos, letters, or messages	76
Attend staff meetings	76
Read Air Force (or semi-official) recurring publi- cations (AU Review, Airman, AF Times, etc.)	76
Coordinate correspondence	75
Answer telephone inquiries	75
Present briefings	73
Read current periodicals and journals relating to field of endeavor	70
Develop or prepare formal briefings	69
Attend scientific or professional conventions or conferences	63

None of these tasks are technical activities; all are very general tasks which might be performed by members of a number of Air Force specialties. Thus, the field remains a very diverse field with a number of distinct jobs. This makes it very important to examine the variety of jobs performed within the utilization field.

The major types of jobs identified are shown in Figure 4, portrayed so as to illustrate the relative proportion of the total sample in each job. The "mainstream" behavioral science jobs are those of Research Scientists (GPO035) and Program Managers and Chiefs (GPO025), which appear at the top of the diagram (see Figure 5), since they perform a core of technical and professional tasks involving behavioral science research or the management of such research programs. These groups, and others, are detailed in the following paragraphs which discuss the types of tasks performed by the members of each job type.

### Job Group Descriptions

I. RESEARCH SCIENTISTS (GPO035, N=20). This group of individuals spent the majority of their work time (about 60 percent) in research, general, and administrative functions. They are mostly 2671 or 2675 lieutenants and captains (one major), but 4 of the 20 are GS-180 DAF civilians (GS-9 to GM-15) directly involved in technical work. These Research Scientists are assigned primarily to the Air Force Human Resources Laboratory (AFHRL), AF Wright Aeronautical Laboratory (AFWAL), AF Manpower

FIGURE 4  
1984 BEHAVIORAL SCIENTIST JOBS

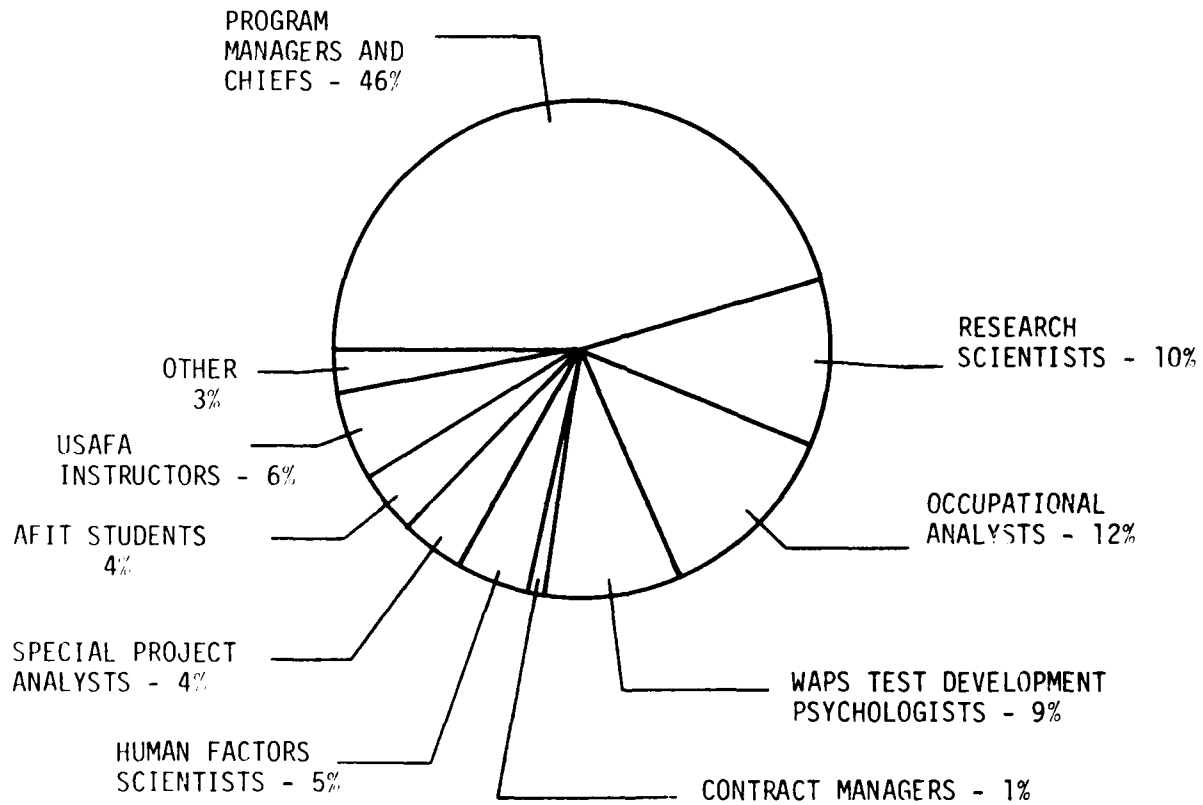
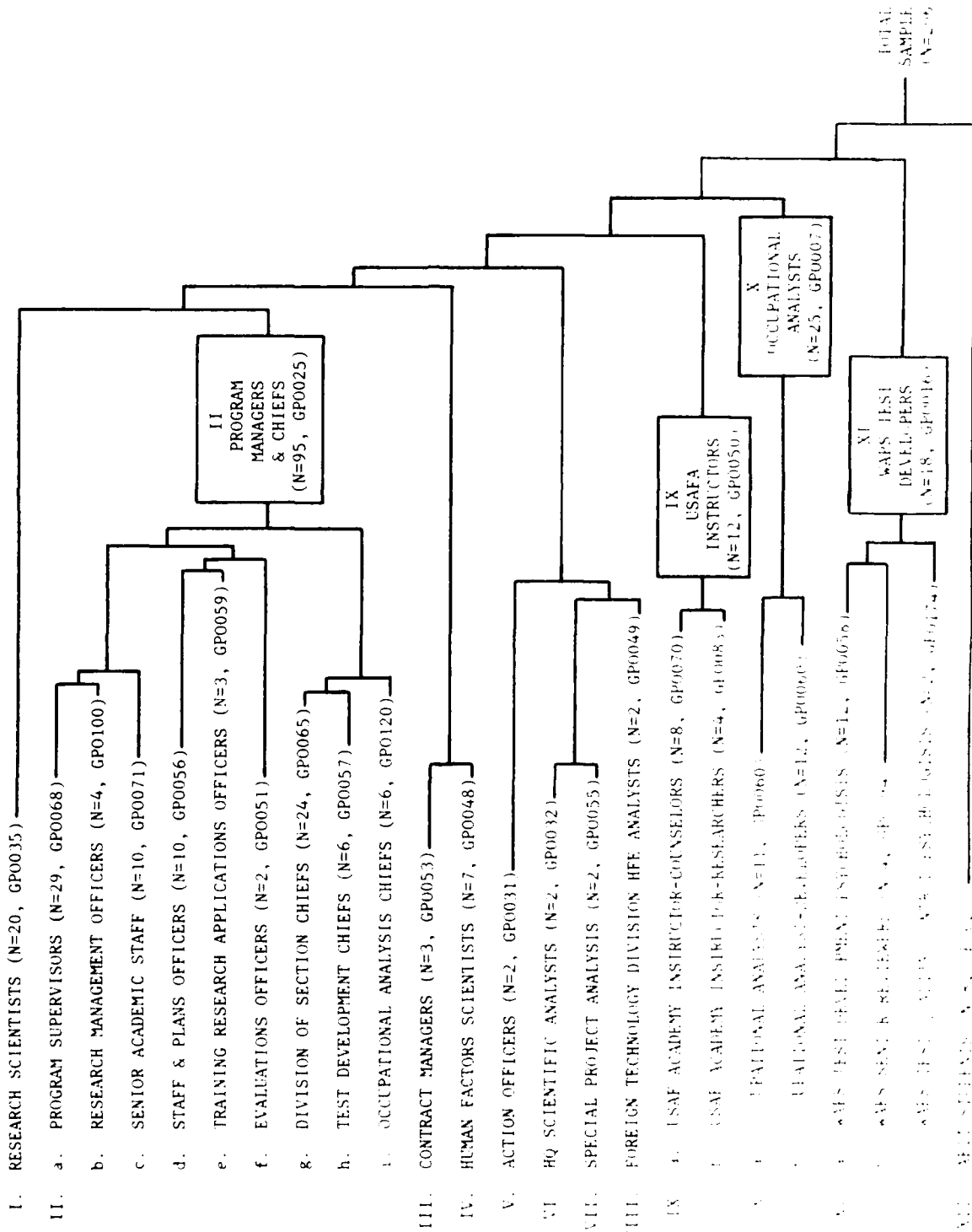




FIGURE 5

HIERARCHICAL RELATIONSHIP OF AF BEHAVIORAL SCIENCE JOBS



and Personnel Center (AFMPC), USAF Recruiting Service (USAFRS), and Aero-Medical Research Laboratory. Only two indicated they supervise anyone, and those two individuals supervise only one each. Their job titles include: Personnel Research Psychologist, Manpower/Personnel Research Psychologist, Personnel Survey Analyst, Research Engineer, and Senior Scientist. Typical tasks include:

- Collect data for research
- Analyze research data
- Arrange for processing of research data
- Analyze results of research
- Prepare summaries or tabulations of statistical findings
- Prepare report(s) documenting findings or conclusions
- Set up experimental designs
- Plan research experiments or research surveys
- Identify specific research problems to be addressed
- Develop or test hypotheses
- Perform research literature reviews
- Design special instruments or techniques for research

These and similar tasks are performed by 80 to 95 percent of the members of the group and, thus, form a meaningful core of tasks for this job. Roughly 35 percent of their total work time is devoted to just the tasks reported above. Thus, this job appears to have a well-defined focus on behavioral science research, although the specific topic of research varies with the individual's assignment.

Fifty to sixty percent of the group are also involved, to some degree, with research contracts, indicated by performance of such tasks as:

- Participate in contractor briefings or reviews
- Monitor contracts in terms of technical or financial aspects
- Maintain documents or paperwork relating to contracts
- Prepare memorandums of agreement

Thirty-five to seventy percent of the members of the group are involved with administrative functions in addition to their research functions. Typical tasks include:

- Prepare or proofread correspondence, such as memos, letters, or messages
- Locate reports or other materials for visitors or requestor

Maintain correspondence files  
Initiate requests for reproduction  
Present program briefings to visitors

Overall, this appears to be a fairly well-defined job which focuses primarily on behavioral science research. Members of the group appear to be first-line technical workers directly involved in conducting Air Force manpower, personnel, and training research, but who also perform some contracting functions and administrative activities in support of research programs.

II. PROGRAM MANAGERS AND CHIEFS (GPO025, N=95). The largest group in the study involved individuals who commonly perform many of the supervisory, administrative, and general functions. These common management type functions bring the group together; yet, there are several distinct types of jobs within the group which makes it a cluster of jobs. Each type of job is described briefly below:

A. Program Supervisors (GPO068, N=29). The initial specialized job type within the Program Managers and Chiefs cluster is one where individuals spend more than 50 percent of the work time on supervisory, research, application of research, and managing research or application programs functions. They range in grade from captain through colonel, most holding the 2675 or 2616 AFSC; 5 of the 29 are DAF civilian employees GS-9 through GM-14, mostly GS-180, Supervisory Personnel Psychologists. Members of the group are assigned to a variety of organizations, including: AFHRL, HQ ATC/XPT, USAFOMC, LMDC, and other units (one each), such as Equal Opportunity Management Institute, 93 BMW, 3400 TCHTW, Foreign Technology Division, ASD, AFLMC, USAFSAM, AMRL, and HQ USAF/RRE. Job titles are typically Chief of a branch, division, or program (such as Chief, Research & Evaluation Division; Chief, ISD Branch; Chief, Test & Training Research; etc.). They supervise 1 to 15 individuals, although some (typically the more junior captains or GS-12s) have no subordinates but supervise a program. Tasks typical of the group, excluding the common administrative tasks, include:

Monitor progress of projects  
Identify research requirements  
Identify specific research issues to be addressed  
Provide research results of findings to users or potential users  
Coordinate with uses on the application of behavioral science research  
Maintain personal contact with personnel of other units  
Review status of programs or issues  
Design or conduct applications research projects  
Resolve problems or conflicts (program or personal)

- Listen to subordinates summarize technical problems
- Present research findings at meetings
- Formulate long-range research objectives
- Determine priorities of projects
- Supervise military personnel

This mix of tasks clearly illustrates the mixture of both supervisory and program management responsibilities. The more technical tasks, such as design or conduct applications research projects, indicate that many of the group are directly involved in research projects. This type of function reflects the relationship of this group with the Research Scientist group discussed earlier. At the same time, the research which this Program Supervisors group is involved with tends to be more applied, or the involvement is at more of a managerial level. This is indicated by tasks such as:

- Direct personnel research activities
- Monitor suspenses
- Advise commander or management on problems or potential problems
- Resolve researcher or user problems that prevent utilization of behavioral science research results
- Advise nonscientific users on techniques or applications to meet their needs
- Interact with lateral managers to resolve technical problems

Some tasks performed by 60 to 80 percent of this group are purely supervisory tasks. Examples of these tasks are:

- Brief subordinates or other groups on policy, plans, or events
- Attend staff meetings
- Review, approve, or disapprove written reports or recommendations submitted by subordinates
- Evaluate or approve briefings
- Advise subordinates on personal decisions or professional development plans
- Assign or approve additional duties

Some 35 to 50 percent of the members of this group also supervise civilians, are involved to some degree in budgeting and planning program activities, and also with some research contracting functions. Thus, this group performs a very wide spectrum of tasks which constitute a very broad job.

B. Research Management Officers (GREFD9, N-4). This small group is composed of four majors, all AFSC 3675, who do not supervise anyone, but rather concentrate their job time on research and contract monitoring (about 35 percent of their job time is spent on just these two functions). They travel, on the average, between 16 and 30 days H&Y per year. Members of this group are assigned to AFHRL, HQ USAF MDXV, AFWAL, and AMRL, and hold duty titles such as Program Manager, Crew System Design Engineer, or Director of Advanced Crew Design. Much of their work involves contract research. Typical tasks include:

- Monitor contracts in terms of technical or financial aspects
- Monitor progress of projects
- Maintain documents or paperwork relating to contracts
- Prepare memorandums of agreement
- Review contract deliverables for acceptability
- Formulate long-range research objectives
- Prepare statements of work (SOW)
- Interact with procurement or administration personnel
- Prepare purchase request (PR) forms

The focus of this job appears to be relatively narrow in that the most time-consuming tasks all involve contracting and contract monitoring. Their involvement with research appears to be more in terms of formulating and staffing research plans than the actual conduct of research themselves. Yet, all do some analysis of research data; this analysis appears to be more in terms of evaluating the products delivered by contractors rather than personally conducting the research effort.

C. Senior Academic Staff Officers (GPO071, N-10). The 10 members of this group are all Professors or Program Directors; most are assigned to the Department of Behavioral Sciences and Leadership (DEPL) of the USAF Academy, but 2 of the 10 are with the Air Command and Staff College or the Personnel School at Maxwell AFB AL (Air University). All are military and range in grade from captain through lieutenant colonel; most are majors. Four of the ten report having a F or V prefix on their 2675 specialty code. Their job focuses on academic instruction, research, general, and supervisory functions; about 60 percent of their job time involves these four functions. Typical instructing tasks performed include:

- Interact with students
- Conduct classroom instruction
- Prepare lesson plans or design seminar courses
- Lead discussions or seminar groups
- Prepare tests
- Develop reading lists or course outlines
- Review student research plans
- Arrange for guest speakers
- Perform new student counseling for newly assigned students

These and similar instructing tasks are the most time-consuming tasks performed by members of this job group; thus, instructing can be considered as the major focus of this job. Members of the group also perform research functions and appear to be very personally involved in conducting behavioral science research. Typical research tasks include:

- Analyze research data
- Collect data for research
- Direct statistical analysis of data
- Perform research literature reviews
- Prepare report(s) documenting findings or conclusions

In addition to teaching and research, members of this Senior Academic Staff group also perform a number of tasks which are general administrative or supervisory tasks; 7 of the 10 indicated they supervise from 1 to 10 individuals. Typical tasks involving these functions include:

- Perform one-on-one counseling for military problems
- Evaluate personnel performance
- Supervise military personnel
- Review status of programs or issues
- Interpret policies for subordinates
- Present program briefings to visitors
- Brief subordinates or other groups on policy, plans, or events
- Develop budget requirements or budget estimates
- Advise subordinates on personal decisions or professional development plans

Thus, this Senior Academic Staff group appears to have a job which focuses most heavily on instructing but which also involves research and supervisory or administrative functions. This makes it a fairly broad scope job with a considerable diversity of tasks to be performed.

D. Staff and Plans Officers (GPO056, N=10). These 10 officers are majors and lieutenant colonels, with 2 being senior captains. They are assigned to a variety of units ranging from HQ USAF (MPXOA), HQ Air Force Systems Command, AFHRL, Aerospace Medical Division (AMD), Ballistic Missile Office (BMO), or USAFOMC/OMT. Only three are supervisors and they supervise only one individual each. Duty titles range from being a "Chief" or Deputy Director of a program (although not supervising more than one other) to R&D Manager or Applications Officer. The major thrust of the job appears to be monitoring and managing research programs. Typical tasks include:

- Monitor progress of projects
- Review status of programs or issues
- Resolve problems or conflicts (program or personal)
- Develop or prepare formal briefings
- Coordinate behavioral science research programs, projects,  
or activities with related or interested agencies
- Develop budget requirements or budget estimates
- Advise commander or management on problems or potential  
problems
- Act as liaison with other services on joint service  
activities
- Act as liaison between technical training, research,  
or plans activities

This staff and plans type of job is focused fairly narrowly on program review and management; 50 percent of the groups' job time involves just 33 tasks, such as those displayed above (and similar activities). Fifty to seventy percent of the group are also involved with the applications of research projects. Tasks typical of this type of function include:

- Coordinate application projects with AF research activities
- Recommend future uses of advanced technologies
- Coordinate applications projects with plans activities
- Coordinate applications projects with using organizations
- Monitor operational implementation of advanced technology
- Resolve researcher or user problems that prevent utili-  
zation of behavioral science research results
- Sell use of behavioral science research results
- Evaluate research agreements or center study proposals

Members of the group perform few direct research tasks, such as collect data. Rather, their involvement with research is at the planning and programming level. Specific research tasks performed by members of this group include:

- Identify research requirements
- Identify specific research problems to be addressed
- Analyze research results

Thus, the job of this group is clearly a plans function as opposed to the type of research involvement demonstrated for the previously discussed groups.

E. Training Research Applications Officers (GP0059, N=3). The three officers in this group specialize in behavioral science research involving training programs. The two captains and one major are assigned to HQ ATC or to a training center; none report supervising anyone. All three hold AFSC 2675. Tasks performed by members of this group are very similar to

those displayed for the previous group, but the focus of the job is on training research and application of research results. Thus, members of this group spent more time in personal contact with personnel from other units (research organizations, users) and in coordinating programs and problems with other agencies. Tasks typical of this role include:

- Coordinate applications projects with technical training activities
- Maintain personal contact with personnel of other units
- Review status of programs or issues
- Act as liaison between technical training, research, or plans activities
- Coordinate with higher headquarters on policies, procedures, or publications
- Coordinate with lateral agencies on subjects such as policies, procedures, publications, budget, or facilities
- Advise nonscientific users on techniques or applications to meet their needs
- Advise commander or management on plans or policy
- Prepare memorandums of agreement
- Recommend future uses of advanced technology
- Evaluate proposals, forms, or suggested approaches submitted by other agencies or individuals

Over 50 percent of the job time of this group involves just 25 tasks, including those listed above and similar functions. Some of these tasks are administrative actions, such as maintain correspondence files and prepare or proofread correspondence, supporting the technical planning and applications management activities. Thus, members of this group have a relatively narrow scope job which is focused almost exclusively on the application of behavioral science research to technical training activities within ATC.

F. Training Evaluation Officers (GPO051, N=2). The two members of this specialized job group are both Lieutenant colonels (one 2616 and one 2675) who are assigned to Air University and TAC. Both are involved in the evaluation of training and educational programs. Job titles include: Deputy Director of Research and Evaluation and Chief, Training Development Branch (HQ TAC). Typical tasks include:

- Recommend approval or disapproval of research requests
- Review research requests
- Review status of programs or issues
- Coordinate with lateral agencies on subjects such as policies, procedures, publications, budget, or facilities
- Maintain personal contact with personnel of other units
- Evaluate survey instruments
- Review, approve, or disapprove written reports or recommendations submitted by subordinates



- Advise commander or management on plans or policy
- Write regulations
- Analyze research data
- Locate reports or other materials for visitors or requestors

Members of the job group also perform a number of administrative tasks which support the technical evaluation functions of their job. Their job is relatively narrow in focus, with over 50 percent of their job time concentrated in just 22 tasks. In this respect, their job is quite similar to that of the preceding group; however, in the case of Training Evaluators, the programs being serviced are Air University educational programs or TAC training programs rather than ATC Technical Training.

G. Division or Section Chiefs (GPO065, N=24). This relatively large job type includes more senior individuals; most are major through colonel and 7 of the 24 are DAF civilian employees in grades GS-12 through GM-15. They are assigned primarily to AFHRL and USAFOMC as Chiefs of sections, branches, or divisions; other organizations involved include AF Office of Scientific Research, ASD, AFOTEC, 6596 STG, HQ AFSC, and the USAF Academy. Most hold DAFSC 2616, but some are AFSC 2675 or 7516. The DAF civilians are GS-180 or 222. Duty titles include: Deputy Director, Division Chief, Vice Commander, Branch Chief, Section Chief, Technical Director, Executive Officer, etc. All are supervisors with direct responsibility for 3 to 12 subordinates. Much of their job focuses on these supervisory functions. Typical tasks include:

- Review status of programs or issues
- Review, approve, or disapprove written reports or recommendations submitted by subordinates
- Attend staff meetings
- Advise commander or management on problems or potential problems
- Advise commander or management on program operations
- Supervise military personnel
- Evaluate personnel performance
- Direct administrative activities
- Advise commander or management on plans or policy
- Interpret policies for subordinates
- Determine budget priorities
- Brief subordinates or other groups on policy, plans, or events
- Supervise civilian personnel
- Review or evaluate position (talking) papers
- Conduct staff meetings
- Conduct briefings

These and similar administrative and supervisory tasks account for most of the job time of these incumbents. Few perform any direct behavioral science research tasks, or they spend very little of their job time doing so. For example, only about 30 percent of the group reviews research requests and only 17 percent reviews contract deliverables for acceptability. Only 12 percent analyze research data. Thus, the major focus of this job is not as much technical research but rather the management and supervision of a research program or organizational unit.

H. Test Development Chiefs (GPO057, N=6). This group are also supervisors, but they are more specialized in that most are captains or majors (one first lieutenant) who head sections within the WAPS Test Development Program within the USAF Occupational Measurement Center. All are AFSC 2675 and all report supervising from 3 to 10 military and civilian employees. Their activities include tasks which are unique to the WAPS Test Development Program, as well as more general administrative and supervisory tasks. Typical tasks include:

- Review test construction documentation
- Attend staff meetings
- Direct USAF specialty knowledge test (SKT) construction activities
- Resolve problems or conflicts (program or personal)
- Conduct staff meetings
- Brief subordinates or other groups on policy, plans, or events
- Review, approve, or disapprove written reports or recommendations submitted by subordinates
- Evaluate personnel performance
- Interpret policies for subordinates
- Establish test schedules and manpower availability for SKT teams
- Write or endorse civilian performance ratings or supervisory appraisals
- Review tests submitted by test psychologists
- Schedule or approve leaves or passes

From these examples of the tasks performed by members of this group, it is evident that their job is a mixture of supervisory activities and program management functions unique to the WAPS Test Development Program. Their job appears to narrowly focus on these functions, with over 50 percent of their job time involving just 26 tasks, including those listed above.

I. Occupational Analysis Chiefs (GPO120, N=3). Like the previous group, this small group of individuals are supervisors and section heads who also specialize in a single program, in this case the Air Force Occupational Analysis Program within the USAF Occupational Measurement Center. They include a major, a captain, and a GM-222-13, who report direct supervision of three to seven occupational analysts. As a group, they

average performing over 100 tasks, which suggests a much broader job than previous supervisory groups. Over 40 percent of their job time involves supervisory, administrative, and general functions, but an additional 30 percent of their job time involves specialized occupational analysis functions. The tasks which are typical of the group include such activities as:

- Proofread camera-ready copies of occupational survey reports
- Review job inventories for content, completeness, or overlap
- Supervise military personnel
- Resolve problems or conflicts (program or personal)
- Evaluate personnel performance
- Gather or review specialty documents, such as AFR 39-1 specialty descriptions, STSs, or CDCs
- Interpret policies for subordinates
- Attend staff meetings
- Analyze task difficulty or training emphasis data
- Analyze occupational data using CODAP to determine background uniqueness among AF specialty groups
- Edit draft or bond copies of occupational survey reports
- Analyze cluster merger diagrams to determine job structure of AF specialties
- Coordinate survey results with Air Staff functional managers, classification monitors, or training managers
- Review CODAP computer requests
- Participate in training and utilization workshops
- Evaluate or approve briefings

Like the previous group, the job appears to be a mixture of technical and supervisory functions. In the case of the Occupational Analysis Chiefs, however, the focus of the job appears to be more technically-oriented, with many of the most time-consuming tasks being specific occupational analysis activities rather than purely supervisory functions. The technical content of the job, illustrated in the examples of tasks listed above, accounts for the broader scope of this job.

III. CONTRACT MANAGERS (GPO053, N=3). This small group of three individuals includes a captain, a major, and a GS-12 (GS-180) who are not supervisors, but who focus on contract monitoring functions. They perform an average of about 40 tasks, with almost 75 percent of their job time accounted for by contract monitoring, administrative, and general activities. Seventy-five percent of their job time involves just 26 tasks, which suggests the job is very narrowly focused on a limited area of responsibility. Typical tasks include:

- Prepare statements of work (SOW)
- Maintain documents or paperwork relating to contracts
- Interact with procurement or administration personnel
- Monitor contracts in terms of technical or financial aspects
- Evaluate bidder responses to Commerce Daily Bulletin (CDB) announcements
- Review contract deliverables for acceptability
- Participate in contractor briefings or reviews
- Prepare or proofread correspondence, such as memos, letters, or messages
- Prepare CDB announcements for potential bidders
- Answer telephone inquiries
- Prepare purchase request (PR) forms
- Read current periodicals and journals relating to field of endeavor

Approximately 50 percent of the job time of members of this group is accounted for by just these 12 tasks, which illustrates the very sharp focus of this job on contracting activities.

IV. HUMAN FACTORS SCIENTISTS (GPO048, N=7). Another specialized job group involves seven lieutenants and captains (one major) who are all AFSC 2671/5 and who focus on Human Factors research and applications. These officers are assigned to a variety of organizations including the Ballistic Missile Office, ASD, AFOTEC, 6520th Test Group, and AFWAL. All are members of Air Force Systems Command or the Air Force Operational Test & Evaluation Center. All had duty titles which involved Human Factors (engineer, scientist, or manager). Fifty percent of the job time of members of this group involve Human Factor Engineering (HFE), general, or contract monitoring functions, and 50 percent of their job time is accounted for by just 40 tasks. Typical tasks include:

- Advise of HFE design considerations
- Participate in contractor briefings or reviews
- Consult with System Program Office (SPO) personnel on human factors problems
- Participate in HFE special study teams or working groups
- Develop HFE tests and evaluation plans
- Implement HFE tests and evaluation plans
- Monitor contracts in terms of technical or financial aspects
- Perform engineering support for advanced development (6.3)
- Participate in development conferences, such as critical design reviews or mockup reviews
- Prepare statements of work (SOW)

- Perform advanced development (6.3) planning and analysis
- Coordinate HFE activities with other USAF agencies
- Apply HFE to advanced development (6.3) prototype design
- Conduct HFE consultation or studies for SPOs
- Present briefings
- Apply HFE in early systems planning, studies, or analysis for engineering development (6.4)
- Interact with procurement or administration personnel
- Coordinate HFE activities within the program office
- Review contract deliverables for acceptability
- Analyze designs for manpower, training, or personnel implications in engineering development (6.4)

The specific HFE tasks which comprise the majority of this job do not overlap with most other job groups in the study. The only overlap with other jobs is in the contracting and general administrative tasks performed (review contract deliverables, present briefings, etc.). Thus, the Human Factors Scientists can be considered a very specialized job which has little in common with other Behavioral Scientist jobs. There are additional HFE personnel in the sample who perform related jobs but did not group with this specialized job type. These additional HFE personnel were performing a variety of plans, supervisory, or administrative functions in addition to their HFE activities. They did not have enough in common, however, to be identified with this very specialized, worker-level HFE Scientist group.

V. ACTION OFFICERS (GPO031, N=2). These two AFSC 2616 officers are a major and lieutenant colonel assigned to AFMPC (PALACE VECTOR) or the staff of ASD. One is the R&D Career Advisor and the other a Special Assistant to a DCS. Both hold PAFSCs other than the 2675 specialty (2665 and 2711). Neither are direct supervisors, but both are involved in a number of personnel actions for Air Force Behavioral Scientists or Scientific Managers. Tasks typically performed include:

- Review manpower documents to evaluate current or projected manning status
- Prepare status boards, charts, or graphs
- Assign personnel to duty positions
- Advise commander or management on problems or potential problems
- Answer telephone inquiries
- Initiate or approve reassignment of military personnel
- Initiate or approve personnel action requests
- Interview or select military personnel for assignment
- Maintain personal contact with personnel of other units
- Coordinate with higher headquarters on policies, procedures, or publications
- Report to senior personnel on problems such as problem areas, attitudes, etc.

- Review records of personnel
- Participate in selection boards (BZ promotion, OTS, awards, etc.)
- Perform career development counseling

Over 50 percent of the job time of this group is accounted for by these 14 tasks, which indicates an extremely narrow or focused job. The nature of these tasks reflects a high degree of specialization in personnel management even though neither individual directly supervises anyone.

VI. HQ SCIENTIFIC ANALYSTS (GPO032, N=2). Another pair of very specialized officers involves a major and a captain assigned to HQ AF Inspection and Safety Center and to the Office of the Secretary of Defense. Both are AFSC 2616 officers who hold other AFSCs as their primary specialization (2724 and 2025A). Their duty titles are as a Scientific Analyst and a Military Assistant. The tasks they perform involve such activities as:

- Write or indorse recommendations for awards
- Prepare or proofread correspondence, such as memos, letters, or messages
- Prepare report(s) documenting findings or conclusions
- Analyze research data
- Conduct briefings
- Develop or prepare formal briefings
- Identify specific research problems to be addressed
- Advise commander or management on plans or policy
- Attend staff meetings
- Request data
- Schedule TDY trips

These few tasks account for almost 40 percent of the job time for the group, reflecting a very specialized job. The tasks themselves are a mixture of personnel management, staff work, and research tasks. Thus, this group can be considered to be primarily a staff-level type of job which concentrates on a few research tasks and related administrative or staffing functions.

VII. SPECIAL PROJECT ANALYSTS (GPO055, N=2). Another very specialized group is composed of two captains (2675 and 2721) who are involved in special projects. Neither supervise others and both perform only a limited number of tasks (28 or 29). They are assigned to AFHRL or HQ AFSC as analysts for the Job Performance Measurement Project or Logistics Resources Analysis function. Most of the tasks they indicate performing are general administrative tasks such as the following:

- Schedule TDY trips
- Prepare trip reports
- Answer telephone inquiries
- Locate reports or other materials for visitors or requestors
- Prepare status boards, charts, or graphs
- Initiate requests for audiovisual or graphic support
- Develop or prepare formal briefings
- Ensure distribution of written reports
- Present briefings
- Read current periodicals and journals relating to field of endeavor
- Attend staff meetings
- Coordinate with higher headquarters on policies, procedures, or publications
- Coordinate correspondence

Missing from this job are the specific behavioral research tasks characteristic of the behavioral science field. It would appear that this small group specializes only in general administrative tasks to support their programs, but without any technical, managerial, or supervisory responsibilities.

VIII. FOREIGN TECHNOLOGY DIVISION HUMAN FACTORS ENGINEERING (HFE) ANALYSTS (GPO049, N=2). These two lieutenants (O-1 and O-2) are both assigned to the Foreign Technology Division as Human Factors Analysts; both hold the 2671/5 specialty and neither are supervisors. Both are attending off-duty college classes working toward a master's degree. The tasks they perform are a mixture of research, administrative, and liaison functions and many of their tasks involve Human Factors Programs. Typical tasks include:

- Develop or prepare formal briefings
- Prepare articles or news items for release to external publications
- Analyze research data
- Prepare report(s) documenting findings or conclusions
- Prepare articles or news items for release to internal Air Force publications
- Perform research literature reviews
- Read current periodicals and journals relating to field of endeavor
- Monitor operational implementation of advanced technology
- Arrange for graphics or visual aids
- Write narrative HF T&E reports
- Analyze designs for manpower, training, or personnel implications in engineering development (6.4)
- Schedule TDY trips
- Welcome visitors or conference groups
- Locate reports or other materials for visitors or requestors

The tasks involved in this job seem to focus primarily on published materials since specific data collection, statistical analysis, and design of instruments are omitted. The job also lacks the more detailed HFE tasks involved in advanced R&D programs (6.3) or more basic research (6.1 and 6.2). This implies a lack of overlap or interaction with other HFE jobs (such as at SPO meetings or HFE study teams or projects). This lack of overlap may be a function of the very specialized mission of the FTD.

IX. USAFA INSTRUCTORS (GPO050, N=12). These captains and lieutenants are all assigned to the Department of Behavioral Science and Leadership (DFBL) at the USAF Academy as Instructors. All are AFSC 2675 and 4 of the 12 report holding a T Prefix to their AFSC. Job titles are as Instructors or Assistant Professors. Only one of the group reports supervising anyone (and then only one individual). The major focus of the job is instructing; however, some members of the group also do some counseling while others do some research. Thus, there are two job variations within the group reflecting this difference in secondary functions. Tasks typical for the whole group include:

- Prepare lesson plans or design course curricula
- Interact with students
- Conduct classroom instruction
- Lead discussions or seminar groups
- Prepare tests
- Perform one-on-one counseling for academic problems
- Provide input to higher level personnel regarding  
academic or military quality of students
- Administer tests
- Score tests
- Read current periodicals and journals relating to field  
of endeavor
- Review or select tests
- Arrange for graphics or visual aids
- Develop reading lists or course syllabus

These tasks are examples of the teaching tasks performed by the group as a whole. Specific research tasks, such as analyze research data, are performed by 40 to 60 percent of the group, while specific counseling tasks, such as perform group counseling of USAFA cadets and refer personnel for specialized counseling such as psychiatric, physicians, or chaplains counseling, are also performed by 40 to 60 percent of the group. This subspecialization, yet overlapping of functions, reflects the job variations mentioned earlier. The subspecialization is, in part, a function of the current organizational structure of the department since the Cadet Counseling Center is now part of DFBL and CCC counselors are cross utilized as instructors or faculty in the DFBL program. Note also the overlap in tasks performed between this group and the Senior Academic Staff Officer (IIC) discussed earlier. Both groups perform the same instructing tasks and some of the research and counseling tasks. However, the Senior Academic Staff Officers also perform supervisory and management functions where members of the Instructor group do not.



X. OCCUPATIONAL ANALYSTS (GPO007, V 25). Another specialized job group involves the Occupational Analysis Program of the USAF Occupational Measurement Center of ALC. This group is composed mostly of lieutenants and captains with AFSC 2671-5 specialties, but also includes GS-11 and GS-12 DAF civilian employees (GS-222 series) and two enlisted members (SMSgt and CMSgt) who perform an equivalent job. None supervise others (the supervisory occupational analyst group was identified and discussed earlier (see III, GPO120)). Also included in this "line worker" occupational analysis group are two USAF Exchange Officers with the Australian Air Force (Melbourne AUS) and the Canadian National Defence Headquarters (NDHQ, DMOS3, Ottawa CAN). Members of this group spent approximately 50 percent of their job time in specific occupational analysis functions and an additional 30 percent of their time in related administrative or general functions in support of the program. Examples of tasks typical of the group as a whole include:

- Gather or review specialty documents, such as AFR 39-1 specialty descriptions, STSs, or CDCs
- Gather or review training course materials, such as POIs, course charts, course standards, or course syllabuses
- Gather or review previous job inventories or occupational survey reports (OSR)
- Review job inventories for content, completeness, or overlap
- Develop or prepare formal briefings
- Present briefings
- Attend staff meetings
- Answer telephone inquiries
- Schedule TDY trips
- Participate in preinventory development or administration conferences

In addition to these tasks typical of the whole group, some individuals sub-specialize in the inventory development function, while others specialize in analysis functions; thus, there are two job variations within this job group. Tasks typical of the analysis specialization include:

- Prepare CODAP computer requests
- Analyze occupational data using CODAP to determine background uniqueness among AF specialty groups
- Analyze cluster merger diagrams to determine job structure of Air Force specialties
- Analyze task difficulty or training emphasis data
- Write narrative occupational survey reports (OSR)
- Edit draft or bond copies of OSRs
- Coordinate survey results with Air Staff functional managers, classification monitors, or training managers

Participate in utilization and training workshops  
Brief incoming or outgoing subject-matter specialists  
(SMS)  
Ensure distribution of written reports

Tasks typical of the inventory development specialization include:

Interview subject-matter specialists to develop inventory tasks  
Organize duty or task lists of job inventories  
Develop background information items for job inventories  
Coordinate with personnel at bases to be visited to arrange visit  
Coordinate inventory development with MAJCOM functional managers, classification monitors, training managers, or Air Force functional managers  
Schedule TDY trips  
Edit draft or bond copies of job inventories  
Review job inventories for content, completeness, or overlap  
Initiate travel vouchers (DD Form 1351-2)  
Proofread camera-ready copies of job inventories  
Observe SMSs in performance of jobs

XI. WAPS TEST DEVELOPMENT PSYCHOLOGISTS (GPO016, N=18).  
This very specialized job group involves those military and civilian psychologists who are assigned with the Occupational Test Development program in support of the Weighted Airman Promotion System (WAPS). Most of the group are second or first lieutenants (AFSC 2671/5), with some being GS-9, 11, or 12 DAF civilian employees (GS-180 series). The supervisory jobs relating to this test development function were identified and discussed earlier (see IHH, GPO057). Thus, members of this group are the Test Development Psychologists who actually construct or review WAPS tests. There are three variations of this job (reflecting the three levels of civilian employees: Test Psychologists (lieutenants and GS-9), Quality Control Psychologists (lieutenants and GS-11), and Test Management Psychologists (GS-12). Tasks that the entire group perform in common include activities such as:

Process item record cards  
Participate in predevelopment or postdevelopment conferences  
Prepare test materials for turn-in at end of projects  
Brief incoming or outgoing subject-matter specialists (SMS)  
Paginate SKTs  
Construct test outlines for SKI development

- Prepare requests for supplemental references for SKI teams
- Prepare and coordinate CUC/SIS/SKI compatibility critiques
- Conduct or participate in master reviews of SKIs

Tasks performed by Test Psychologists include all those listed above, plus the following task:

- Coordinate editorial changes with Senior Review Psychologists*

Tasks performed by Quality Control Psychologists include all those listed above, plus the following tasks:

- Review test questions submitted by Test Psychologists
- Review tests submitted by Test Psychologists
- Perform prefinal test edits
- Proofread camera-ready copies of SKIs for release

Tasks performed by Test Management Psychologists include those listed above as common for the other two groups, plus the following tasks:

- Establish test schedules and manpower availability for SKI teams
- Answer telephone inquiries
- Monitor AKT/CRT program
- Prepare or update AKT status lists
- Attend in-service education programs
- Maintain correspondence files

Thus, the WAPS test development jobs expand at each level, with added tasks and responsibilities. The Test Management Psychologists accomplish tasks at all three levels, from developing test items with SMSs (on minor revision projects) to master reviews and editing tests for release. In addition, they track current developments in specialties to decide when tests should be scheduled for revision and answer inquiries from the field on the accuracy of any item.

XII. AFII STUDENTS (GPOC21, N-8). Also included in the study were those officers currently enrolled in civilian institutions for graduate programs in psychology and holding 267125 or 261116 AFSCs. Most, but not all, of the officers in such assignments responded to the survey. They are currently at a

variety of universities including Bowling Green State University (Ohio), Purdue University, University of New Mexico, and Oxford University (England). All of students in the sample included two lieutenants, three captains, and three majors. They hold additional or primary AFSCs in a variety of specialties including 1305B, 7024, M1021H, F4024, and 7324. Thus, many are transitioning from another specialty into the behavioral science field. Some are slated for duty with the USAFA-DFBL as instructors or professors. Tasks performed by the All of Students are typically professional development and learning tasks, as would be expected:

- Attend college courses on-duty
- Conduct research for class projects
- Participate in seminar or discussion groups
- Conduct research for thesis or dissertations
- Read current periodicals or journals relating to field of endeavor
- Prepare research proposals for class course work
- Write thesis or dissertation
- Perform research literature review
- etc.

In some of these tasks, the students overlap with behavioral science researchers in normal duty assignments, such as perform research literature reviews. They also perform a number of tasks which many Behavioral Scientists do off-duty (since a sizeable number of the junior officers in the field are involved in off-duty education programs at the graduate level).

#### Comparison of Background Characteristics

In addition to examining each of the various behavioral science jobs on the basis of tasks performed, we need to also examine the groups in terms of the similarity and differences of the type of individuals performing each job. Data concerning such background characteristics for each group are displayed in Table 4. By examining these types of data, it is possible to quickly see major similarities and differences in the groups. The differences are highlighted in the sub-section below.

Table 4 contains systematic differences among the groups in terms of the grade of the individual performing the various jobs. Second and first lieutenants are assigned to "entry-level" or first-time scientist jobs including: Scientist, Scientist, Program Analyst, Scientists, including the FTD HFE Analyst, Scientist, Analyst, and WAPS Test Development Psychologists. Lieutenants and first lieutenants also appear among the USAFA Instructors and Professors. The majority of the first lieutenants are assigned to all of the groups identified except FTD HFE Analysts (who are lieutenants). This wide assignment of lieutenants and first lieutenants are the primary working-level scientists of the behavioral science area. They are found in both the "entry-level" jobs as

well as jobs usually assigned to more experienced scientists. Majors are found in all but four of the job groups identified in this study, while lieutenant colonels are found only in the Program Managers and Chiefs and Action Officers jobs. Colonels are only in the most senior positions. These are all grouped into the Program Managers and Chiefs type of job. Thus, the more senior grades are assigned as managers or chiefs of behavioral science programs. These more senior Behavioral Scientists have only a limited type of job available to them. The job content of these jobs was described earlier under each type of job. A more detailed analysis of differences in job content by grade level will be presented in a later section.

Civilian employees included in the study range in grade from GS-9 to GS-15. These DAF civilian employees are found in many of the jobs identified, including: Research Scientist, Program Managers and Chiefs, Contract Managers, Occupational Analysts, and WAPS Test Developers. They do not appear in the specialized analyst and action officer types of jobs, nor in the USAF Academy Instructor positions. The Instructor positions are all military by policy, although the USAF Academy does have a Visiting Professor program for 1-year tours of duty with DFBL. DAF civilians are also not in the Human Factors Engineering Scientist jobs, but this is a problem of sampling. DAF civilian employees are assigned to a variety of HFE positions (for example, at ASD Wright-Patterson or the Flight Test Center at Edwards - in both these organizations, the Chief of the Human Factors Branch is a DAF civilian and both branches have several civilian scientists. These scientists were inadvertently omitted from the sample).

Two enlisted members were also a part of the sample. They are a CMSgt and SMSgt assigned with the Occupational Analysis Program of the USAFOMC. Both are performing Occupational Analyst jobs along side company-grade Behavioral Scientists and GS-9 through GS-12 DAF civilians. Originally undertaken as a test, this assignment of very senior enlisted members to company-grade equivalent jobs has proved extremely successful (both in terms of job performance and impact on the junior officers assigned).

MAJOR COMMAND OF ASSIGNMENT -- The job groups also vary by major command to which they are assigned. The Research Scientists are assigned primarily in Air Force Systems Command, but 10 percent are in Air Training Command and 15 percent in AFMPC. Program Managers and Chiefs are, as would be expected, assigned in all of the commands using Behavioral Scientists. Other job types are found assigned to just one or two commands. For example, Contract Managers are all assigned to AFSC, while USAFA Instructors are all in USAFA. The "entry-level" positions with working-level scientists are found primarily in ATC and AFSC, depending on where their programs are assigned. In terms of total numbers, ATC is the largest user of Behavioral Scientists (predominantly with the USAFOMC in WAPS Test Development, Occupational Analysis, and Training Development). In some cases, only one Behavioral Scientist is assigned to a command (such as FAC or SAC). These unique positions are for some unique function (Training Evaluations or ISD Management) which may expand in the future (particularly with the programmed increase in Human Factors Scientist positions).

DUTY AFSCs -- The percentages of each job group composed of members holding various duty specialty codes is also shown in Table 4. Most types of jobs are composed primarily of AFSC 2671 or 2675 officers. Note the concentration of entry-level (2671) officers in the Research Scientist, HFE Scientist, Occupational Analysis, and WAPS Test Development jobs. These parallel, of course, the distribution of second and first lieutenants. The distribution of Staff Scientists (2611/6) is primarily focused in Program Managers and Chiefs (where 2675 officers are also found), and in some of the small, specialized analyst types of jobs (Contract Managers, Action Officers, and HQ Scientific Analysts). There do appear to be some of these specialized staff-level jobs where only 2611/6 scientists are assigned, although the majority of the staff scientists are in the Program Managers and Chiefs, where they are intermixed with 2675 scientists. Thus, there does not appear to be a clean separation of the 2675 and 2616 levels of work, except for very small groups assigned to higher headquarters or very specialized functions with only one or two individuals assigned.

SOURCE OF COMMISSION -- The background of individuals in each job group in terms of their source of commission is also displayed in Table 4. Note that the USAF Academy is the primary source of officers for the Human Factors types of jobs (HFE Scientists and FTD HFE Analysts). Note also that the majority of the present AFIT Students are also USAFA graduates. Interestingly, however, only 8 percent of the present USAFA Instructors are USAFA graduates. Fifty percent of the Instructors group are OTS graduates and 42 percent are AFROTC graduates. (Note: this USAFA Instructors' group includes the basic instructors and counselors. Other USAFA DFBL members are found in the Senior Academic Officer job type within the Program Managers and Chiefs cluster.)

AVERAGE DAYS TDY PER YEAR -- Another type of information summarized in Table 4 is the amount of temporary duty performed by members of the various job groups. Note that there is a considerable variance among the groups in terms of the required travel. WAPS Test Development Psychologists seldom travel--only 6 percent of the group perform any TDY and their travel is limited to 7 days or less. Conversely, the Occupational Analyst group all travel to some degree--52 percent of the Occupational Analyst group spend more than 30 days per year traveling (which is a normal requirement of analysis to Technical Training Centers or other units). Human Factors Engineering Scientists also spend considerable job time traveling--86 percent of the HFE group are TDY at least 16 or more days per year.

EDUCATIONAL BACKGROUND AND REQUIREMENTS -- Table 4 also summarizes the amount of education currently possessed by members of each job group as another way to characterize the similarities and differences of the incumbents. The only job group to include noncollege graduates is the Occupational Analyst group where, as was discussed earlier, there are two enlisted members (SMSgt and CMSgt) assigned to company-grade-equivalent positions. The groups where individuals with an undergraduate degree only or a bachelor's degree plus additional courses are the same job groups where mostly lieutenants are assigned. These are also the groups where new USAF

Academy graduates are assigned, and the predominance of these groups reflects work beyond just the bachelors' level, which reflects, in most cases, an intensive off-duty education program. (Some of these groups with "Bachelor's Only" members are probably where USAFA graduates are newly assigned who are not yet enrolled in graduate education programs.)

These data reflect that the majority of individuals performing most kind of behavioral science jobs hold a master's degree or higher (as is required by the current AFR 36-1 as a specialty requirement for the fully-qualified level). Those with doctorates are concentrated primarily in the Program Managers and Chiefs, USAFA Instructors, and Research Scientist groups (as would be expected, since these groups are somewhat more senior in grade).

The questionnaire also asked whether the individual's current position was officially designated as requiring a doctoral degree. Responses to this question are also displayed in Table 4. The official doctoral degree requirements are in the Research Scientist, Program Managers, Human Factors Engineering Scientist, and USAF Academy Instructor types of jobs (where most of the doctoral level scientists are assigned, as noted earlier). Note, however, that while none of the HFE Scientists in the sample hold doctorates, 29 percent of their positions call for such a degree. This difference suggests that additional Human Factors Ph.D.-qualified psychologists are needed for these positions. Conversely, while 41 percent of the USAF Academy Instructors indicate they hold a doctorate, only 17 percent of their positions require that qualification. The difference in this group suggests an overage of doctoral-level individuals in the USAFA/DFBL. It is not clear, however, whether too many Ph.D.'s are assigned or too few positions have been validated as requiring the advanced education. To address this issue, the next question in the survey asked for an opinion of the level of education required to properly perform the job.

Responses to the question concerning what degree should be required reflect that more Ph.D.'s are required for most job groups than are currently authorized. For Research Scientists, 15 percent of the jobs are thought to require doctoral qualified individuals, where only 5 percent of the jobs are currently so designated. For Program Managers and Chiefs, the difference is also 10 percent, with 26 percent of the positions currently having the requirement and 36 percent considered as needing the advanced education. In the Human Factors Engineering Scientist group (where none currently have a doctorate, but 29 percent of the positions require one), only 14 percent of the incumbents felt their position should require such a qualification. The USAF Academy Instructors indicate that 33 percent of their positions should have the doctoral requirement (versus 17 percent currently so designated). One other group indicating a doctoral requirement is the WAPS Test Development Psychologists, where 6 percent (or one position) is required and one position (6 percent) is now so designated (though none are assigned). This position is as Chief of the Test Research Section, which is perhaps the only lieutenant position where a doctorate is a job requirement. The AFIT Student responses to this particular question should be disregarded. The question does not have the same meaning for them in student slots as for normal duty positions; thus, their responses cannot be interpreted as relevant to determining normal Ph.D. requirements.

PROFESSIONAL MILITARY EDUCATION -- Another question in the inventory asked for the current level of Professional Military Education of the incumbents; their responses are also displayed in Table 4. Only the Program Managers and Chiefs, who are the more senior officers, and the USAF Academy Instructors have had extensive PME participation. A surprising proportion of most job groups reflect 50 to 100 percent with no PME. In some groups, this is a function of the relatively junior manning (the FTD HFE Analysts are both lieutenants with two years or less on the job). Even in the most senior group, the Program Managers and Chiefs, only 44 percent indicate they have completed SOS in residence and only 43 percent by correspondence. (Note: These two categories are not necessarily additive for this question since some individuals will have completed both by correspondence and in residence. This is clearly demonstrated by the Action Officers group, where 100 percent completed SOS in residence and 50 percent also completed it by correspondence.) Some proportion of 9 of the 12 job groups completed Air Command and Staff College by seminar (or correspondence), but only 12 percent of the Program Managers and Chiefs attended in residence. Finally, only a small percentage of the Program Managers and Chiefs have completed Air War College by seminar, in residence, or by correspondence. This is indicative of the relative seniority of members of this group versus all other job types.

USEFULNESS OF EDUCATION AND PME -- Survey respondents were also asked to rate the degree to which their psychology degree has been useful in their present job. A similar question was asked about the usefulness of their PME training to their job. One hundred percent of the USAF Academy Instructors indicated their degrees were very useful (5 to 7 on a 7-point scale with 4 as neutral). This appears a very realistic rating for the Instructor group since all are teaching psychology at the undergraduate level in DFBL. Over 70 percent of the Human Factors Engineering Scientists and the Program Managers and Chiefs felt their psychology education was very useful. Conversely, none of the HQ Scientific Analysts or the FTD HFE Analysts felt their education was relevant or useful in their present job. In terms of PME training, less than half of most groups felt their PME was useful in their present job. Only the Action Officers (two individuals) felt PME training useful. Since members of this group have only completed SOS, they must find part or all of the SOS curriculum beneficial in their present job (which involves staff and planning functions). None of the Contract Managers, HQ Scientific Analysts, Special Project Officers, and FTD HFE Analysts felt PME was useful in their present job. In the case of the FTD HFE Analysts, this is a function of their not yet having completed even the basic SOS course; thus, the zero rating simply means they do not yet have any PME.

PROFESSIONAL GROUP MEMBERSHIP -- Table 4 also includes data reflecting the proportion of the members of each group who belong to various professional organizations, such as the American Psychological Association or Human Factors Society. The data clearly indicate a general lack of involvement with professional groups, with one or two exceptions. Most noteworthy is the Human Factors Society, where 86 percent of the HFE Scientists, 50 percent of the Special Projects Officers, and 100 percent of the FTD HFE



Analysts belong. Thus, those involved in the Human Factors area have a clear-cut professional participation in the Human Factors Society, which is directly relevant to their occupation. In terms of the American Psychological Association and the other professional groups, only the more senior Program Managers and Chiefs have systematic involvement across these societies. Twenty-five percent of these incumbents belong to the APA (as student, associate, or full member). Twenty-two percent belong to the Human Factors Society and 26 percent are involved in the Military Testing Association (as are 25 percent of the USAF Academy Instructors and 28 percent of the WAPS Test Development Psychologists). Thus, involvement in professional organizations appears limited overall, with membership being largely restricted to more senior individuals or to those job groups with a clear job identification with the particular society (Human Factors, Military Testing, etc.). The general lack of participation in the American Psychological Association is rather surprising since APA is the major professional group for all psychologists.

CAREER PLANS -- Data concerning incumbents' future plans and intentions are also summarized in the final panel of Table 4. In reviewing these figures, some of which appear to be very low, please remember the sample includes (for some jobs) DAF civilian employees as well, for whom this question is not totally relevant. Thus, the percentages across the response options will not total to 100 percent for those groups with large proportions of civilians (shown in an earlier panel of this table). In terms of those motivated to remain in the 2675 field, the USAF Academy Instructors are clearly the most positive group, followed by the Occupational Analysts, Program Managers and Chiefs, and AFIT Students. Groups whose members clearly do not expect to remain Behavioral Scientists include the Contract Managers, Human Factors Scientists, Action Officers, HQ Scientific Analysts, Special Project Officers, and FTD HFE Analysts. Most of these groups are small and some of the groups are composed of non-2675 officers (for example, both the Action Officers and HQ Scientific Analysts groups are 2616 Scientific Managers who would not want to return or be Behavioral Scientists). The Human Factors groups, however, are both composed entirely of 2671 and 2675 officers, yet none expect to remain in the 2675 field. This appears to be a clear indication of the lack of identification of Human Factors Scientists with the 2675 area or their desire for a separate professional identity.

More Behavioral Scientists indicated they were "Undecided" than responded to most other categories (with a few exceptions, such as the USAF Academy Instructors). These data, when taken with the lack of professional membership noted above, suggest that many Behavioral Scientists are unclear about their future and uncertain of their professional identity. It is not clear, however, whether their lack of identity is with their jobs, with the behavioral science field, or with the Air Force at large. To examine these possibilities, we need to look at their attitudes toward their jobs and their organizations.

TABLE 2  
PERCENTAGE OF THE VARIOUS TYPES OF BEHAVIORAL RESPONSES OF EACH SUB GROUP RESPONDING

[illegible]

TABLE 4 (CONTINUED)

BACKGROUND CHARACTERISTICS OF MEMBERS OF THE VARIOUS TYPES OF BEHAVIORAL SCIENTIST JOBS  
(PERCENT OF EACH JOB GROUP RESPONDING)

[illegible]





## Comparison of Job Attitudes

Survey respondents were also tasked to provide ratings concerning their attitudes toward their jobs and how their talents are used by their present positions. The majority of most job groups rated their jobs as very interesting (see Table 5), with the exception of Contract Managers and Special Project Analysts. Sixty-six and fifty percent of these two groups, respectively, rated their job as dull. If you will refer to the description of these jobs given earlier, you will note that both of these groups have very limited jobs. Both jobs concentrate on 26 to 28 tasks which are largely administrative or procedural in nature. Neither of these jobs is involved with scientific research, except indirectly (reviewing the work of contractors or others). Thus, their extremely low job interest may be, at least in part, a function of the limited scope of their job. For most other groups, 70 to 100 percent found their work interesting.

Job incumbents were also asked to rate the degree to which their present job made use of their individual talents. Their responses are shown in Table 6. The Contract Managers were the only group to respond completely negatively to this question, with 100 percent feeling their talents were used not at all or very little. Given their low job interest and the nature of their job, discussed above, this result might be expected. Most of the other groups felt their talents were used well, but only the USAF Academy Instructors and AFIT Students had a majority rating the question as excellent or perfect use of their talents.

A third job attitude question involved the sense of accomplishment the scientists derived from their job. They were asked to indicate their dissatisfaction or satisfaction (see Table 7). Almost all groups indicated good satisfaction with their job accomplishments, with the exception of the Contract Managers (100 percent dissatisfied) and the Special Project Analysts (50 percent neutral). As noted in the previous discussion, these are both very limited jobs and negative job attitudes might be expected.

A final attitude question involved organizational climate, a multifaceted construct which has been much discussed in psychological research literature in recent years. Incumbents were asked to rate their relative satisfaction or dissatisfaction with the organizational climate of their unit. In response to this question, a surprising proportion of several job groups indicated they were dissatisfied (see Table 8). One hundred percent of the Contract Managers were dissatisfied, as well as 86 percent of the Human Factors Scientists, 50 percent of the FTD HFE Analysts, Special Project Analysts, and Action Officers. Even 45 percent of the Research Scientists indicated they were dissatisfied, with an equal proportion indicating satisfaction. Thus, overall, the responses to this question must be considered as substantially less positive than for the previous attitude questions. The attitudes of the Contract Managers are not surprising considering their job content and lack of job interest or satisfaction from their work. We would expect their dissatisfaction to affect their attitude toward their organization. For the Human Factors Scientists, however, their lack of satisfaction with their organizational climate directly contrasts with their positive job interest. In terms of contrasting with the other types of jobs, their negative organizational attitude

(along with the Contract Managers) clearly sets them apart from all other groups as being extremely negative. Yet, this negativism does not appear to be a function of their type of work, educational level, or professional involvement. There is no obvious possible explanation for this degree of negative attitude in the data available in the study (and none took advantage of the opportunity to write in comments about their work situation in the job inventory).

TABLE 5  
JOB INTEREST OF JOB GROUP MEMBERS - 1984  
(PERCENT RESPONDING)

JOB GROUPS	"MY JOB IS..."		
	(1-3) DULL	(4) SO-SO	(5-7) INTERESTING
RESEARCH SCIENTISTS (GPO035, N=20)	15	5	80
PROGRAM MANAGERS AND CHIEFS (GPO025, N=95)	4	6	90
CONTRACT MANAGERS (GPO053, N=3)	66	33	0
HUMAN FACTORS SCIENTISTS (GPO048, N=7)	14	0	86
ACTION OFFICERS (GPO031, N=2)	0	0	100
HQ SCIENTIFIC ANALYSTS (GPO032, N=2)	0	50	50
SPECIAL PROJECT ANALYSTS (GPO055, N=2)	50	0	50
FTD HFE ANALYSTS (GPO049, N=2)	0	0	100
USAF A INSTRUCTORS	0	8	92
OCCUPATIONAL ANALYSTS (GPO007, N=25)	8	4	88
WAPS TEST DEVELOPMENT PSYCHOLOGISTS (GPO016, N=18)	11	11	70
AFIT STUDENTS (GPO021, N=8)	0	0	100



TABLE 6  
PERCEIVED USE OF TALENTS - 1984  
(PERCENT RESPONDING)

JOB GROUPS	"MY TALENTS ARE USED"		
	(1-2) NOT AT ALL- VERY LITTLE	(3-5) FAIRLY- VERY WELL	(6-7) EXCELLEN- OR PERFECT
RESEARCH SCIENTISTS (GPO035, N=20)	15	75	10
PROGRAM MANAGERS AND CHIEFS (GPO025, N=95)	10	52	38
CONTRACT MANAGERS (GPO053, N=3)	100	0	0
HUMAN FACTORS SCIENTISTS (GPO048, N=7)	0	86	14
ACTION OFFICERS (GPO031, N=2)	0	100	0
HQ SCIENTIFIC ANALYSTS (GPO032, N=2)	0	100	0
SPECIAL PROJECT ANALYSTS (GPO055, N=2)	50	50	0
FTD HFE ANALYSTS (GPO049, N=2)	50	50	0
USAFA INSTRUCTORS	8	33	57
OCCUPATIONAL ANALYSTS (GPO007, N=25)	12	56	32
WAPS TEST DEVELOPMENT PSYCHOLOGISTS (GPO016, N=18)	28	61	11
AFIT STUDENTS (GPO021, N=8)	0	0	100

TABLE 7

SENSE OF ACCOMPLISHMENT FROM THE JOB - 1984  
(PERCENT RESPONDING)

JOB GROUPS	HOW SATISFIED WITH JOB ACCOMPLISHMENTS..."		
	(1-3) DISSATISFIED	(4) NEUTRAL	(5-7) SATISFIED
RESEARCH SCIENTISTS (GP0035, N=20)	25	0	75
PROGRAM MANAGERS AND CHIEFS (GP0025, N=95)	12	2	86
CONTRACT MANAGERS (GP0053, N=3)	100	0	0
HUMAN FACTORS SCIENTISTS (GP0048, N=7)	20	-	71
ACTION OFFICERS (GP0031, N=2)	0	0	100
HQ SCIENTIFIC ANALYSTS (GP0032, N=2)	0	0	100
SPECIAL PROJECT ANALYSTS (GP0055, N=2)	0	50	50
FID HFE ANALYSTS (GP0049, N=2)	0	0	100
USAFI INSTRUCTORS	0	0	100
OCCUPATIONAL ANALYSTS (GP0007, N=25)	12	8	80
WAPS TEST DEVELOPMENT PSYCHOLOGISTS (GP0016, N=18)	28	0	72
AFTI STUDENTS (GP0021, N=8)	0	0	100

TABLE 8  
ORGANIZATIONAL CLIMATE OF YOUR UNIT - 1984  
(PERCENT RESPONDING)

JOB GROUPS	SATISFACTION WITH ORGANIZATIONAL CLIMATE OF UNIT...		
	(1-3) DISSATISFIED	(4) NEUTRAL	(5-7) SATISFIED
RESEARCH SCIENTISTS (GPO035, N=20)	45	10	45
PROGRAM MANAGERS AND CHIEFS (GPO025, N=95)	30	5	65
CONTRACT MANAGERS (GPO053, N=3)	100	0	0
HUMAN FACTORS SCIENTISTS (GPO048, N=7)	86	0	14
ACTION OFFICERS (GPO031, N=2)	50	0	50
HQ SCIENTIFIC ANALYSTS (GPO032, N=2)	0	0	100
SPECIAL PROJECT ANALYSTS (GPO055, N=2)	50	0	50
FTD HFE ANALYSTS (GPO049, N=2)	50	0	50
USAFA INSTRUCTORS	0	8	92
OCCUPATIONAL ANALYSTS (GPO007, N=25)	16	8	72
WAPS TEST DEVELOPMENT PSYCHOLOGISTS (GPO016, N=18)	28	11	56
AFIT STUDENTS (GPO021, N=8)	0	0	100

## COMPARISON OF 1981 AND 1984 JOB ATTITUDES

Another way to analyze the present job attitudes of the various job groups is to compare them with the data from the 1981 administration of the survey. A number of the job groups identified in the present study were somewhat different from the 1981 jobs, based on a larger sampling of 2616 officers; however, the "entry-level" or "journeyman" professional jobs are the same. A comparison of the jobs and their tasks will be given in the next section, but first we need to examine the comparative job attitudes of those groups identified in both studies in order to better understand the current job attitude problems.

Five of the basic job groups were the same in both studies: USAFA Instructors, Human Factors Psychologists, Occupational Analysts, WAPS Test Development Psychologists, and the AFIT Students. Comparative job attitude data for 1981 and 1984 for these job groups are displayed in Table 9. The data for the four attitudinal questions are summarized to show only the positive responses so that all four questions can be compared at the same time. Note that for USAFA Instructors, Occupational Analysts, and WAPS Test Development Psychologists, the level of positive responses are the same or better between 1981 and 1984. The AFIT Students are "topped out" in both studies since they are in a uniquely advantageous personal and professional development situation. Apparently, they know how good their situation is and fully appreciate it. The Human Factors Psychologists show improvement in their job interest and how their job utilizes their talents, but their sense of accomplishment from the job has declined and their satisfaction with the organizational climate of their unit has plummeted.

These data concerning HFE Psychologists' attitudes reinforces the earlier conclusion that it is not the content of their job which is the problem. Rather, it implies that something has happened in their organizations which makes them very unhappy with their work environment, while they continued to be interested in their work and satisfied with how the Air Force uses their talents on the job. The decline in satisfaction with organizational climate on the part of the Human Factors Psychologists may represent a serious problem for the future. Their very positive interest in the job itself would suggest their work will not suffer--the human factors tasks will continue to be performed well. But their very negative attitude toward their organization may be responsible for 100 percent of them indicating they do not plan to remain in the 2675 area (shown earlier in Table 4). None of them indicate they plan to leave the Air Force before retirement (also shown earlier in Table 4), which indicates their dissatisfaction is not toward the Air Force as a whole. Yet, something needs to be done in terms of learning why members of this group are so dissatisfied if we do not wish to risk severe problems in maintaining this type of function in the future. The Human Factors Psychologists need some type of special attention in terms of determining what the problem or problems are and management taking some type of remedial action.

One other finding is obvious from the comparison of 1981 and 1984 job attitudes of the various job groups. This is the marked improvement in job attitude for the WAPS Test Development Psychologists (see Table 9). In

1981, half of the members of this job group felt their job was "dull" or "so-so", did not feel their talents were well utilized, and were dissatisfied with their sense of accomplishment from the job. Three-quarters of the group were dissatisfied with the organizational climate of their unit in 1981. In 1984, however, members of this job group had relatively positive job attitudes, with 70 percent or better finding their job interesting, feeling their job utilized their talents, and feeling a sense of accomplishment from their work. Satisfaction with the organizational climate jumped from 25 to 56 percent during this 3-year period. Yet, their job content has not changed significantly (see following section). Their job is limited in scope in terms of their performing a small number of very specialized tasks which are largely procedural and administrative in nature (see earlier discussion of the job group).

This increase in the proportion of WAPS Test Development Psychologists who are satisfied with the organizational climate of their unit is paralleled by the Occupational Analysts group (56 percent in 1981 to 72 percent satisfied in 1984). Since both of these groups are in the USAF Occupational Measurement Center and both improved significantly in the last 3 years, it is logical to assert that something has happened within the organization to improve the unit's organizational climate.

During this time period, OMC had undergone major growth, with the added missions of the PFE Study Guide and MTS Standard (OMP Branch) and the Training Development Service (OMT), including operating detachments at each of the Technical Training Centers. A major computer system has been procured for use of the various OMC programs and new systems software is under development by contract.

At the same time, OMC has gained in stature with HQ USAF, AFMPC, and the major commands through greater interaction in Utilization and Training Workshops, Training Planning Teams, and other functional conferences and meetings (such as the recent RIVET WORKFORCE initiative by the HQ USAF/LEY Maintenance Staff). OMC's participation in a variety of major changes or initiatives has gained a much higher level of acceptance and respect for the organization. All of these factors have obviously impacted on the perceptions of organizational climate by OMC personnel, and this is reflected in the job attitude data collected in the 1984 survey.

The growth of programs and changes in job attitudes since the last survey indicate a dynamic career field. To highlight this issue further, we need to take a look at the changes in jobs during the last 3 years.

TABLE 9

COMPARISON OF 1981 AND 1984 JOB GROUPS' ATTITUDES  
(PERCENT RESPONDING)

ATTITUDE/LEVEL	USAF INSTR		HUMAN FACTORS PSYCHOL		OCCUP ANALYSTS		WAPS TEST PSYCHOL		AFIT STUDENTS	
	1981	1984	1981	1984	1981	1984	1981	1984	1981	1984
I FIND MY JOB...										
INTERESTING (5-7)	88	92	78	86	96	88	50	70	100	100
THE JOB UTILIZES MY TALENTS...										
FAIRLY WELL TO PERFECT (3-7)	94	92	89	100	92	88	50	72	100	100
MY SENSE OF ACCOMPLISHMENT...										
SATISFIED TO EXTREMELY SATISFIED (5-7)	81	100	89	71	88	80	50	72	100	100
SATISFACTION WITH ORGANIZATIONAL CLIMATE...										
SATISFIED TO EXTREMELY SATISFIED (5-7)	62	92	67	(14)	56	72	25	56	100	100

## COMPARISON OF 1981 AND 1984 JOBS

The jobs identified in the present survey can also be compared and contrasted with those identified in the 1981 administration of the USAF job inventory. During this period, the authorized strength in the 2675 specialty increased from 134 to 143 (a growth of 7 percent). The jobs identified in the earlier study are detailed in Appendix C. Their titles are displayed in Table 10, along with the equivalent groups in 1984.

The 1984 Research Scientist group encompasses three separate job types from the 1981 study. As noted in the earlier discussion of tasks performed by the job types, the major focus of these groups involves designing, planning, collecting, and analyzing research data and presenting such data in written reports and formal briefings. The job descriptions for the 1981 groups and the 1984 groups are very similar, with the same core of research tasks appearing in all job descriptions.

The largest group in the 1984 study was the Program Managers and Chiefs cluster. As can be seen in Table 10, the equivalent 1981 jobs are found in a variety of job groups. The Functional Unit Supervisors identified in the 1981 study form four distinct groups in the current project. This greater specificity, is in part, a function of a more complete sampling of Scientific Managers (261X) in the 1984 field administration. The larger total sample (206 versus 163) included enough similar positions to permit this greater differentiation among the supervisors and chiefs. The jobs, however, remain basically the same--concentrating on supervisory and management functions. The inclusion of some technical tasks, performed in common by at least a few people, is responsible for the separation of Program Managers and Chiefs into distinct job types.

Many of the present behavioral science jobs (such as Staff and Plans, Contract Managers, Senior Academic Staff, etc.) have equivalents in the previous study. The tasks and responsibilities of such jobs have not changed substantially in the intervening years. Thus, most of the jobs and responsibilities have remained stable over the last 3 years.

There are, however, some jobs identified in 1981 which are not currently being performed by AFSC 26XX officers. For example, in the 1981 study, a group of AFROTC Instructor-Counselors (IIIB) was identified where Air Force Behavioral Scientists were assigned to several AFROTC Detachments at civilian universities. In the intervening years, the officers in these assignments have returned to AFSC 2675 or 2616 positions (in ATC, USAFA, and SAC) and, because of the strong competition for 2675 manning, they have not been replaced in such AFROTC assignments. Thus, this type of job is not currently performed by Behavioral Scientists. The Other Instructors job type identified in the 1981 study is also missing from the present sample. In this case, the change is probably a function of sampling. Officers assigned in other teaching assignments (AFIT Department of Organizational Behavior, DWMC, etc.) carry a 0940 identifier code. They were unintentionally omitted from the 1984 sample. These jobs continue to be manned by master's- and doctoral-level officers with behavioral science backgrounds. They do not hold a 26XX duty AFSC.

Several small job groups appear in the present study which were not identified in the 1981 data. These include: Research Management Officers (IIB), Action Officers (V), HQ Scientific Analysts (VI), Special Project Analysts (VII), and FTD Human Factors Analysts (VIII). Each of these groups includes two to four officers. Research Management Officers are all 2675 majors involved in *monitoring contract research*, which has increased in recent years. These officers include at least one of the new HQ USAF 2675 positions. The Action Officers and HQ Scientific Analysts are AFSC 2616 officers. Their appearance in the present study is, in part, a function of the better sampling of Scientific Managers (261X). The Special Project Analysts include a 2675 and 2721 officers; both perform highly administrative jobs not seen in the earlier study. At least one of these positions is a new billet which did not exist in 1981, involving the Job Performance Measurement Project. This is a DOD project involving all the US Military Services, which was established in 1983 to meet a Congressional mandate for a better criterion of performance for use in validation studies of the Armed Forces Vocational Aptitude Battery (ASVAB). Thus, in this case, the present job is a new mission or function added to the behavioral science field.

In addition, the FTD HFE Analysts are also a new function added to the specialty since 1981. These positions were developed just after the last study for the purpose of monitoring foreign technological developments in Human Factors. In terms of the tasks which members of this group report performing, this monitoring is largely a matter of reviewing foreign technical journals and publications (presumably in translated form) to evaluate new developments or equipment innovations in other countries.

The changes in jobs outlined above reflect a rather dynamic utilization field with some new jobs being created over the last 3 years and other jobs being discontinued. The amount of change pictured above is actually a very conservative picture, since only those changes impacting on two or more positions would be visible in an analysis of group data. In addition, there are a sizeable number of changes which involve unique positions being added or deleted. Some of the new positions which are not reflected in the job analysis include: a lieutenant colonel 2675 position to head a special studies unit at HQ USAF/MP, several major 2675 or 2616 positions with HQ USAF/MPXOA (one of which is reflected in a 1984 job group), a major 2675 position with the Armed Forces Radiological Research Institute (Bethesda MD; actually this position is reestablished since it was discontinued in early 1981), a major 2616 position with the new DOD Training Data Analysis Center (TDAC) in Orlando FL, an additional major 2616 position in HQ ATC/TTX, one captain 2675 (plus a captain 7516 and one GS-222-11) position with USAFOMC/OMYX for task forecasting, one major 2675 in USAFOMC/OMTO to develop an automated task analysis system, one major 2616 in USAFOMC/OMTE to establish an evaluation program, etc.

Other changes are also in progress which will further expand the 26XX Behavioral Scientist professional force. In the Human Factors area, for example, HQ AFSC has recently staffed an extensive position paper authorizing the addition of 30 to 60 additional HFE manpower spaces in the FY85-87 time frame to redress the decline in Human Factors activities over the last two



decades, and to better service the development and acquisition on new systems. These new HEE positions will be a mix of military and civilian positions and will be primarily in AFSC organizations, with some assigned to the operational commands. Included in this initiative is the development of a new AFIT short course in Human Factors to be taught at Wright-Patterson AFB OH, which will be a required orientation upon entering the Human Factors area.

In addition, some further expansion of USAFOMC missions is anticipated as specific AFHRL/MOM research efforts (i.e., Task Difficulty Benchmarking, Strength and Stamina ratings, Testing Importance ratings, Performance Measurement System, etc.) are completed and new MFI support systems (or subsystems) become operational. Additional positions may also be required in support of advanced training technology (in TDAC or HQ ATO) or the Advanced On-the-Job Training Research Program (as it evolves toward operational implementation).

The changes over the last 3 years, the current additions to the specialty, and the added missions and manpower authorizations which are already programmed in the POM for next year and beyond, all indicate that the Behavioral Scientist and associated Scientific Manager career fields are quite dynamic in terms of growth and imply significant problems in identifying, selecting, and assigning appropriately qualified personnel over the next few years. This is an area of major concern to functional managers, as indicated in the HQ AFSC initiative to create an AFIT short course and program out the added manpower over a 3-fiscal year period. This anticipated growth and its concomitant manning problems are part of the context which led to the current proposal to change AFR 36-1 requirements for the AFSC 2675 specialty description.

TABLE 10

## COMPARISON OF 1981 AND 1984 BEHAVIORAL SCIENTIST AND RELATED JOBS

1981 (N=163)		1984 (N=206)	
IA. PERSONNEL RESEARCH PROGRAM MANAGERS		I. RESEARCH SCIENTIST	
IG. AFMPC ATTITUDE RESEARCHERS			
IV. TASK SCIENTISTS		II. PROGRAM MANAGERS AND CHIEFS	
II. FUNCTIONAL UNIT SUPERVISORS		A. PROGRAM SUPERVISORS	
		G. DIVISION AND SECTION CHIEFS	
		H. TEST DEVELOPMENT CHIEF	
		I. OA CHIEFS	
		III. CONTRACT MANAGERS	
IE. CONTRACT MONITORS		II. D. STAFF AND PLANS OFFICERS	
IC. PLANS STAFF OFFICERS		II. C. SENIOR ACADEMIC STAFF	
ID. SENIOR ACADEMIC STAFF		II. E. TRAINING RESEARCH APPLICATIONS	
IB. TECHNOLOGY APPLICATIONS OFFICER		II. F. EVALUATION OFFICERS	
IH. AWC EVALUATORS		IV. HUMAN FACTORS SCIENTISTS	
VII. HFE		IX. USAFA INSTRUCTORS	
IIIA. USAFA INSTRUCTORS - COUNSELORS		A. INSTRUCTOR-COUNSELOR	
C. USAFA INSTRUCTORS		B. INSTRUCTOR-RESEARCHER	
		NONE	
B. AFROTC INSTRUCTOR-COUNSELOR		X. OCCUPATIONAL ANALYSTS	
C. OTHER INSTRUCTORS		XI. WAPS TEST DEVELOPMENT PSYCHOLOGISTS	
VI. OCCUPATIONAL ANALYSTS		XII. AFIT STUDENTS	
VIII. WAPS TEST DEVELOPMENT PSYCHOLOGISTS		II B. RESEARCH MANAGEMENT OFFICERS	
V. STUDENTS		V. ACTION OFFICERS	
		VI. HQ SCIENTIFIC ANALYSTS	
		VII. SPECIAL PROJECT ANALYSTS	
		VIII. FTD HFE ANALYSTS	
NONE			

The purpose of this research is to determine the needs of the existing classification structure and to determine the information on personnel in the organization and to determine the functions and the duties and responsibilities of the personnel in the organization. The study is a descriptive study.

The average age of the 26X officers is 34.4 years, with a range of 26.6 or 26.75. The majority of the 26X officers were commissioned directly, including 14 percent second lieutenants, 16 percent first lieutenants, and 57 percent captains. Twenty-one percent are majors, 10 percent are lieutenant colonels, and 1 percent are colonels. Sixty-one percent of the 26X officers have prior enlisted service, with 10 percent of the 26X officers having served at 25 percent or less of their enlistment. Thirty-five percent of the 26X officers are assigned to Air Force commands, with 15 percent in AFSC and 19 percent with the USAF Academy. Other commands include Air University (3 percent including Air University, HQ USAF (2 percent), USAF (1 percent), and special assignments (9 percent) - include AFM, AFCE, and DOD). Eighty-six percent of the 26X officers are male and 14 percent are female. Thirty-four percent of the 26X officers are 26 years of age or less, and 60 percent have a fully-qualified duty AFSC. Fifty-one percent have 24 months or less on the job, and 35 percent have 24 months or less total time in the specialty; thus, the members of the field are, on the whole, relatively inexperienced. On the average, officers in the 26X specialty perform about 69 tasks, but there is a great deal of variation - 60 minimum to their specialty (standard deviation of 39 tasks).

A review of the sample, restructured job description for the entire group of 125 Behavioral Scientists revealed there are very few tasks which they all perform. This finding was especially based on the closer examination of the very diverse jobs with the sample identified earlier. The only tasks commonly performed are very general tasks (e.g., to train, answer telephone inquiries, read current periodicals, attend to correspondence, etc.). Only about 10 percent of the sample performed a particular research task, yet when taken together, they comprised over the total group, the area where the majority of the sample was concentrated (45%). This indicated the necessity of a more detailed study of a variety of jobs (not all involving research) and a new way of classifying the jobs within the specialty was developed. The new classification scheme is explained further here. The development of a new classification scheme for the specialty should be treated as:

For any given  $\alpha$ , the  $\alpha$ -th order approximation to the probability density with respect to  $\alpha$  is obtained by solving the corresponding tasks performed by the  $\alpha$ -th order approximation to the probability density, namely, the  $\alpha$ -th order approximation to the probability density is obtained by the  $\alpha$ -th order approximation to the probability density, and the  $\alpha$ -th order approximation to the probability density is obtained by the  $\alpha$ -th order approximation to the probability density, where  $\alpha$  is the order of the approximation.

The present specialty description (AFR 36-1, A10-25/26, 1 January 1984) summarizes the field as follows: "Conducts research to identify, quantify, predict, and control behavior of humans and variables affecting behavior. May experiment with animals in comparative research. Studies behavior as manifested either individually or in groups, and in interaction with machines." The duties and responsibilities of the field include: a. Conducts research, b. Conducts applied research, c. Monitors and performs liaison and consultative activities, and d. Manages behavioral sciences research and development (see Appendix A for a complete copy of the specialty description).

When this description is compared with the data presented earlier in our discussion of the jobs of the specialty, it is obvious the current description does not capture the variation in the jobs currently being performed. While the present description is so generic that all Behavioral Scientist work is covered in a very general sense, one could not read this description and develop any realistic feel for the actual jobs being performed. For example, the development of WAPS promotion tests for the enlisted force is only inferred by the phrases "predict...behavior of humans..." in the specialty summary and "designs special instruments..." in the duties and responsibilities sections of the specialty description. The same type of observation could be made for a variety of the other jobs within the specialty, including the USAFA Instructors, Occupational Analysts, Human Factors Engineering Scientists, etc. If the objective of the specialty description system is to provide a realistic description of the work performed within the specialty, then a different approach is needed in a specialty as diverse as the USAF Behavioral Scientist (267X).

The Human Factors Question - To Shred or Not to Shred. As early as 1976, an Air Force Systems Command Human Factors Engineering Steering Group met to identify and address the unique problems of HFE Behavioral Scientists. Prior to that year, the Human Factors Engineering Psychologists had been designated with the A shredout on their specialty code (from 1964 to 1976) or a separate AFSC (1954 to 1964) altogether (see discussion of the history of the specialty in the INTRODUCTION section of this report). A HQ Air Force Systems Command/SDD letter, Human Factors Career Field Management, 9 Feb 1977, expressed concern for the "current limitations in the human factors area." The AFSC HFE Steering Group concluded there were problems in "the capability to adequately perform the required support to weapon system acquisition programs for the full acquisition cycle." The groups also felt there was a major "problem of no clear or positive career pattern for the 2675 career field." They proposed merging the 2675 career field into the Biomedical Services Corps under the Surgeon General, but only if 2675 officers could retain their "line officer status (Ibid)."

This Steering Group (established by AFSC Sup 1 to AFR 800-15) has met periodically through the years to study the problems of the human factors area, and they commissioned a major study of the jobs of Human Factors Engineers in the Air Force. This study (Human Factors Engineering Career Field, PMAG Study Report, March 1978 by Major T. Porkorny and Major J. Janicke) involved administering a survey questionnaire to HFE incumbents to determine attitudes and problems of the human factors area. Major questions which were raised by the report included the following:

a. Should all Human Factors Engineering Support, both technology development and application, be focused in a single operation or staff?

b. Where is the most important location for the Human Factors Engineering Technology advocacy role?

c. Could the military Human Factors Engineer be better served by moving to another specialty code?

d. Should the military Human Factors Engineering career field be retained?

Additional issues raised for discussion included 267X entry-level education requirements, short courses for HFE training, and presentations on international, triservice, and USAF activities in the HFE arena (see HQ AFSC/SDDE Ltr, Human Factors Engineering Steering Group (HFESG) Meeting, 10 May 1978).

The HFESG concluded the group needed to take a stronger and more dynamic role in the HFE area. They felt the HFE specialties had not had the attention they deserved or needed. The perceived erosion of the career field and the resulting effects on USAF Weapons Systems needed to be examined so that attention could be focused on both near-term and long-term solutions (see HQ AFSC/SDDE Ltr, cited above).

One outcome of this major study effort was the establishment of a Human Factors functional manager (or proponent) at Headquarters, Air Force Systems Command at Andrews AFB MD. This individual researched the status of Human Factors Scientists over the last 20 years and concluded that the number of such scientists had dramatically declined over that period. Often, HFE responsibilities are now assigned as an additional duty and quite often, the work is just not done. At the same time, the number of HFE design errors (implied from aircraft crash investigations and other system design failures) have increased. With such data, the AFSC Human Factors Manager has developed and staffed a program to increase the number of HFE Scientists in the next few years and created an AFIT short course as a required orientation for new HFE Scientists. The number of AFIT advanced degree programs for human factors has also increased for recent years as well.

In another initiative, the AFSC HFE Manager submitted a draft change to the AFR 36-1 specialty description for AFSC 2675 which would separate the Human Factors Behavioral Scientists into a separate shredout (in effect, a return to the previous A shredout). In the initial staffing of this concept, AFMPC/MPCRPO (now MPCMC) asked for OMY review of the proposal (in light of the data from the 1981 survey) and for new data to be collected. The draft specialty description was reviewed and revised based on the jobs identified in the behavioral science area. The specialty is summarized in the proposed change as follows.

"Conducts and monitors basic and applied military or contract research to identify, quantify, predict, and manage human behavior and performance; determine system, occupational, or job requirements; develop tests or measures of human skills, aptitudes, motivations, attitudes, and performance; applies research results in the design, development, acquisition, or modification of weapons systems or human factors requirements; applies advanced technology in human resources selection, training, promotion, or other Air Force management systems; consults, instructs on, or manages behavioral science activities."

Duties and responsibilities for the specialty are outlined as follows: (1) Conducts or monitors basic or applied research, (2) Determines system, occupational, or job requirements, (3) Develops tests and measurement devices, (4) Applies human factors technology and research results in systems design or modification, (5) Consults on instructs in human behavior, and (6) Manages behavioral sciences research and applications programs (see Appendix B for details of the revised specialty description).

The draft AFR 36-1 specialty description also authorizes the return to an A shredout for Human Factors Behavioral Scientists. This change was initiated and supported by the Air Force Systems Command proposal, and it is fully supported by data in the present study as follows:

(1) The Human Factors Scientists appeared as a separate and very distinct job group in the present study (and an equivalent group in the 1981 data analysis). In addition, new HFE positions have been established in the Foreign Technology Division to incorporate a new aspect of the human factors arena. While the number of HF incumbents is relatively small (11 percent of the total 267X sample), they are assigned to diverse organizations in various parts of the country (from the Ballistic Missile Office in Los Angeles and Flight Test Center at Edwards to ASD at Wright-Patterson, ESD in Massachusetts, and Andrews AFB MD). Thus, there is a need for special handling of their recruitment and assignment actions.

(2) They are a very specialized group performing tasks not performed by most other members of the specialty. As discussed in the analysis of specialty job groups, the HFE Scientists are involved with 6.3 and 6.4 research and development tasks which almost no other job group perform. These kinds of tasks represent a very distinct subspecialization within the career field and infer a requirement for a specialized background (or special training).

(3) The subspecialization of human factors is a recognized area within the broader Industrial/Organizational Psychology area. The professional identification of most USAF HFE Scientists is with the Human Factors Society, rather than the APA or MTA (as noted in earlier discussion of Table 4). In this respect, they represent the only distinct group within the 267X field to have such a professional identification.

(4) Job attitudes of Human Factors Scientists are different, with the vast majority of HF Scientists being dissatisfied (see earlier discussion of organizational climate data in Table 8). In addition, their level of satisfaction with their organizations is much lower today than was the case in 1981 (see earlier comparison of 1981 and 1984 job attitudes by job groups, Table 9). These data strongly suggest a growing level of discontent among the Human Factors Specialists within the behavioral science area.

(5) Conversely, the job interest and perceived use of talents for Human Factors Specialists are high and have increased over the last 3 years (see Table 9). This suggests the problem is not a question of the job content (tasks performed), but rather is dissatisfaction with how they are recognized and dealt with by the system.

In addition to these data, the projected growth in the HF area programmed over the next few fiscal years would suggest a need for very specialized identification and management of Air Force Human Factors resources. This is particularly important in terms of being able to achieve the very technical objectives of the Human Factors program (AFR 800-15). Most Behavioral Scientists do not have the degree of technical background (in terms of academic or experience specialization) to perform the required HF functions. Thus, the creation (or reestablishment) of a separate human factors shredout (2675A) appears fully justified.

Other Possible Shredouts. Other entry-level jobs where there is little overlap in tasks include the USAF Academy Instructors, Occupational Analysts, and WAPS Test Development Psychologists. While each of these groups might qualify as a shredout in terms of the uniqueness of their tasks, they are not geographically dispersed (as are the Human Factors Scientists); thus, they do not need a shredout for use in assignments and personnel management. They might, however, be grouped into some kind of generic shredout to distinguish them from the human factors and other research psychologists. Thus, one possible structure could be:

- 2675A - Human Factors Engineering Scientists
- 2675B - Research Behavioral Scientists
- 2675C - Personnel & Training Behavioral Scientists
- 2675Z - Other Behavioral Scientists

This type of structure is essentially a return to the 1964 to 1986 specialty structure, with the substitution of "Research Behavioral Scientists" for what was previously Experimental Psychologist (2675E). The "Other" group would include Sociologists, Anthropologists, and similar social sciences who are included in the 2675 area.

A second alternative shredout structure might be to have only two shreds:

2675A - Human Factors Scientists  
2675B - Research & Personnel Behavioral Scientists

The simpler, two shredout structure would only require separate career management (selection, training, and assignments) for the Human Factors Specialists versus all other Behavioral Scientists. For the present, this simple two-shred structure is probably sufficient.

### Entry-Level Educational Requirements

Another aspect of the proposed AFR 36-1 change is the elimination of the requirement for a master's degree for entry into the 2675 specialty. This change was proposed both by HQ AFSC and the USAFOMC, and has the concurrence of most other behavioral science organizations. The change will officially recognize the defacto situation of new personnel entering the field without having a master's degree. Over the last 10 years, because of the continual shortage of new personnel and the limited number of master's-level AFTF slots, new graduates of the USAF Academy (with psychology majors) have been permitted to enter the 2675 specialty with the understanding they would complete an off-duty master's program during their first assignment. Occasionally, this type of arrangement has been also extended to a limited number of other graduates. Additionally, some officers who are eliminated from a flying training program, if they have a background in industrial psychology or a related area, are assigned to the career field. Thus, at present, there are a number of 267X officers who have only a bachelor's degree currently working in the field. Table 11 displays the educational level of the 125 Behavioral and Staff Scientists included in the present study.

TABLE 11  
EDUCATION LEVEL OF AF BEHAVIORAL SCIENTISTS  
(PERCENT RESPONDING)

AFSC	BACHELOR'S	BACHELOR'S +	MASTER'S	MASTER'S +	DOCTORATE
2671-1	0	18	22	33	22
2671-2	0	0	40	30	30

These data reflect that 10 percent of the current members of the specialty do not have the required educational qualification for the fully-qualified position. 10 percent who graduate beyond the bachelor's level (but



not yet enough for a master's) are obviously those who are currently in off-duty educational programs. When asked how they earned (or are now earning) a master's degree, 47 percent of the 267X officers indicated off-duty education programs. As can be seen from these data, a sizeable proportion of the present members of the field are or have been involved in off-duty graduate education programs.

When asked what degree level their present position should require, 25 percent indicated their position should require a doctorate, 50 percent indicated a master's degree, and 22 percent said their position should require only an undergraduate degree. Thus, based on the opinions of current job incumbents, only about 75 to 78 percent of the 267X positions require a graduate degree. The results of this question were detailed by job group in the earlier section of the report discussing behavioral science jobs (see Table 4). Jobs where incumbents indicated that only a bachelor's degree should be required included: Occupational Analysts, WAPS Test Development Psychologists, HFE Scientists, and FTD HFE Analysts. These are the basic ("journeyman") professional-level jobs of the specialty. Thus, it would appear realistic that the entry-level AFSC requirement should not include a requirement for a master's; indeed, that is how the system has, in fact, been operating over the last decade. The present proposed change legitimizes the existing procedure.

There are additional benefits, however, to be realized from making the change officially. It would permit those with bachelor's degrees in psychology or a closely related area to apply for commissions through OTS, and it would permit the AFROTC program to have entries directly into the behavioral science field. Thus, it would increase the recruiting base for the specialty for those officer procurement programs. In addition, it would permit those officers already on active duty with appropriate undergraduate degrees to apply for cross-training into the specialty.

Based on the job and attitudinal data of current career field members and with the expected growth in specialty positions in the next few years (in Human Factors and other functional areas), the proposed change dropping the master's requirement for entry into the specialty appears realistic. With such a change, however, several actions will be required. Since the master's requirement will no longer be in AFR 36-1, those positions which require advanced degrees will need to be revalidated (AF Form 1779). It might be easier to identify those entry-level positions and change them, rather than to revalidate all the other positions, since the majority of 267X positions will continue to require advanced degrees (based on the job incumbents' opinions cited above).

Greater stress or motivation will also be required to ensure that new career field members understand that most advanced positions (those beyond initial assignments) do require master's-level preparation (or higher). Part of this educational motivation will probably be taken care of by normal AFIT programs, since it will now be possible for a 267X officer to be selected for a master's program under AFIT (where in the past, only members of other specialties could be selected).

### Summary Comments on AFR 36-1

Overall, the proposed change to the AFR 36-1 specialty description for the 267X specialty appears to be realistic and well supported by data obtained in the present survey. The new description provides a more comprehensive overview of the specialty, and the duties and responsibilities more completely characterize the varied jobs within the career field. The deletion of the master's degree requirement for entry into the specialty is consistent with current practice and is further supported by the opinion data from the survey. The change should substantially improve the recruiting population and flow of new officers into the behavioral science field. Recommend the revised specialty description be approved and implemented in the next AFR 36-1 revision (April 1985).

### Scientific Managers - AFSC 2616

The Scientific Manager "Directs, formulates, manages, evaluates, and coordinates research and development programs and projects; Acts as executive manager of large and diverse scientific organizations; and supervises scientific research activities" (AFR 36-1, A10-15/16, 1 Jan 1984). Duties and responsibilities include: a. Formulates research objectives and policies, b. Establishes and monitors research programs and projects, and c. Coordinates research activities (see Appendix A for details).

Duties and Tasks. The description of the staff-level specialty is very general. This may be a function of the broad scope of responsibilities, as well as the very diverse scientific backgrounds of the "feeder" AFSCs. As noted in the INTRODUCTION section of this report, several very difficult 26XX company-grade AFSCs merge into a single staff-level specialty (including Computer Research - 2625, Physicist - 2635, Chemical Research - 2645, Metallurgist - 2655, Nuclear Research - 2665, Behavioral Scientist - 2675, and Scientific Analyst - 2685). This marked diversity of backgrounds limits the possible technical coverage of responsibilities in the AFR 36-1 description to only very general statements.

In terms of the tasks performed by 2616 officers, the present study examined only those with behavioral science backgrounds (who had a primary or secondary AFSC of 2675 or a related academic degree) and a small sampling of other Scientific Managers for comparison. In addition to the general administrative tasks performed by everyone, behavioral science Scientific Managers (2611/6) also:

- Review status of programs or issues
- Advise commander or management on plans or policy
- Advise commander or management on program operations
- Determine budget priorities
- Review, approve, or disapprove written reports or recommendations submitted by subordinates
- Coordinate with lateral agencies on subjects such as policies, procedures, or publications

- Coordinate with higher headquarters on policies, procedures, or publications
- Monitor progress of projects
- Welcome visitors or conference groups
- Attend scientific or professional conventions or conferences
- Advise subordinates on personal decisions or professional development plans

As inferred by the last task listed above, the majority of the Scientific Managers are also supervisors. Some of the typical supervisory tasks they perform include:

- Brief subordinates or other groups on policy, plans, or events
- Supervise military personnel
- Evaluate personnel performance
- Review manpower documents to evaluate current or projected manning status
- Interpret policies for subordinates
- Assign personnel to duty positions

Over 50 percent of the 2611/6 officers indicated performing these kinds of supervisory tasks. When averaged across all members of the 2611/6 group, these kinds of supervisory functions accounted for more of their total work time (over 25 percent) than any other duty. Thus, the supervisory role is a very important one which should be given emphasis in the 2611/6 specialty description. Currently, such supervisory responsibilities are only inferred in the AFR 36-1 description as an inherent part of "supervises scientific research activities," but is not an explicit duty and responsibility. Recommend a section be added under paragraph 2 of the specialty description (2. Duties and Responsibilities) which outlines the supervision of technical and scientific (as well as support) personnel.

Specialty Qualifications. The present specialty description for Scientific Managers contains specific required qualifications for knowledge, education, experience, and training. "Knowledge of Air Force research and development policies, procedures, and management practices is mandatory." This requirement appears realistic in terms of the tasks performed (noted above), such as "Brief subordinates...on policy, plans, or events" and "Coordinate with higher headquarters on policies, procedures, or publications." There are a number of related tasks performed by the group which further verify this requirement.

The education requirement for the 2611/6 specialty is a "Master's degree in science or engineering, or bachelor's degree in science or engineering with master's degree in R&D management or business administration is desirable." Such an educational requirement does not appear to meet the needs of the behavioral science area. Data presented earlier indicated that 40 percent of

current 2611/6 officers hold a master's degree, an additional 30 percent hold a master's plus advanced course work, and 30 percent hold a doctorate. Sixteen percent of the 2611/6 officers indicated their present position was designated as requiring a doctoral degree and 19 percent felt their position should be a Ph. D. position. Sixty-two percent of these officers indicated their present position should require a master's degree. Thus, 81 percent of all 2611/6 officers in this study felt their present job required an advanced academic degree (master's or higher). These data would suggest that, for the behavioral science area at least, the educational requirement should be stated so that it is obvious that most positions require a master's or doctoral degree in a relevant academic area.

The current AFR 36-1 notes that a degree in science or engineering, or a master's in R&D management, is desirable. To address the issue of what type of educational background is needed, one question in the USAF job inventory asked respondents to indicate what academic code their duty position should be designated. Thirty-five percent indicated that Business & Management was the appropriate academic coding for their position. Other codes rated as needed included: Leadership (5 percent), Sociology - group interaction (3 percent), Psychometrics (3 percent), Psychological Warfare (3 percent), Industrial/Organizational Psychology (total = 24 percent; specific areas include: morale/attitude research - 5 percent, human relations - 5 percent, labor relations - 3 percent, performance measurement - 5 percent, and recruiting/selection - 5 percent), Experimental Psychology (total = 16 percent; subareas included: motivation - 3 percent, human factors - 11 percent, and communications research - 3 percent), and Educational Psychology (8 percent). This marked diversity of appropriate academic backgrounds is probably a direct reflection of the diversity of jobs within the behavioral science field. Note, for example, that 11 percent indicate Human Factors (within Experimental Psychology), which is the proportion of Human Factors Psychologists in the total sample of this study.

While the largest single grouping within these academic background recommendations is Business & Management (35 percent), the great diversity of the recommendations suggests that highlighting a single area may be inappropriate. If only one has to be mentioned in the AFR 36-1 description, then Business & Management is the most appropriate. If, however, more than one area can be noted, or if the diversity of backgrounds can otherwise be communicated, then some change to the educational requirement may be desirable. We must remember, however, that in this sample, only the behavioral science area has been studied. The other 261X input fields (chemistry, computer science, physics, metallurgy, etc.) have not been included in the study. Any change must be generic enough (as at present) or sufficiently flexible to service the needs of those fields, as well as the behavioral science area.

A Separate Staff-Level AFSC. A basic question for the 261X field is whether the very diverse scientific specialties, which are presently inputs to the Scientific Manager area, are all appropriate for grouping into one specialty. Certainly the system is working at present. It is probably working because of very individualized selection and assignment actions to ensure the proper person-job fit. Reading the AFR 36-1 description literally (and accepting the

present input fields) would indicate that any chemist or metallurgist or nuclear engineer would be acceptable as a senior supervisor and scientific manager for the behavioral science field (and vice versa!). Yet, the ratings by present incumbents indicate that many of the jobs need to have academic backgrounds appropriate to the type of behavioral science research being done (although admittedly, 35 percent say a general Business & Management master's degree is all that is required).

One alternate strategy would be to recognize the very specialized nature of the Scientific Managers jobs and the specialized backgrounds required. The 2611/6 could be discarded, and a third level of job written into each specific field (such as behavioral science). Thus, we would have a revised 267X AFSC structure such as follows:

- 2671 - Entry-Level Behavioral Scientist (bachelor's required)
- 2674 - Company Grade Behavioral Scientist (master's desirable)
- 2676 - Behavioral Science Manager (MA or Ph. D. required)

Similar structures could be used for the other 26XX fields as well. This type of three-tiered AFSC structure replicates the behavioral science structure of the early 1950s (when they were known as Human Resources Research Officers, Assistants, and Staff Officers). Thus, there is historical precedent for such an arrangement.

As was seen earlier in the discussion of behavioral science jobs, there is a mixture of the 2675 and 2616 AFSCs in many career field jobs, particularly among the Program Managers and Chiefs. The AFSC assigned to individual positions appeared to be more a function of grade level of the authorization or of individual organizational preference than any systematic function. Thus, the current senior manager positions may be designated as 2616 in one agency or unit and equivalent positions as 2675 in other organizations. A three-level structure, as proposed above, would help to solve this situation, since then the academic background and prior experience of the individual would be in a behavioral science area.

## COMPARISON OF 267X AND 261X JOBS

A Group Difference description was run to highlight the similarity and difference between the Behavioral Scientist (AFSC 267X) and Scientific Manager (AFSC 261X) jobs. All those tasks where there was less than 20 percent difference in the two groups were eliminated from the computer product so as to highlight the tasks performed by one group and not the other. Table 12 highlights some of the tasks performed by more Behavioral Scientists than Scientific Managers. Note that almost all of the tasks where more Behavioral Scientists are performing are direct research tasks. Less than 20 percent of the Scientific Managers report performing tasks involved in collecting and analyzing research data.

Conversely, there are 55 tasks where the difference is 20 percent or greater, which more 2611/6 Scientific Managers perform than do Behavioral Scientists. Examples of some of these tasks are shown in Table 13. Note that the majority of these tasks are administrative or managerial in nature--none are core technical tasks of the behavioral science area. Thus, the major differences seem to be in the general areas of administration and management, as would be expected from the AFR 36-1 specialty descriptions and normal differences between company grade and field grade staff positions.

Close review of the tasks in Tables 12 and 13 also gives a picture of the common tasks performed by both 261X and 267X officers. Note that for some tasks, even where there is a difference of 20 percent or greater, the majority of both groups are performing some of the activities--for example, more than 66 percent of both groups "Conduct briefings" (Task D81, in Table 13). There is an overlap of 10 to 30 percent of the basic research tasks (see Table 12) and an overlap of 16 to 60 percent of the two groups performing administrative, supervisory, and general management tasks.

This type of overlap can be quantified in the CODAP system either as "task overlap" or as "time-spent overlap." Task overlap can be expressed in several ways. In terms of total number of tasks performed by any member of the two groups, we find that 2671/5 officers perform all 330 tasks in the USAF job inventory (that is, at least one individual marked each task, even though no one person marked every task). For 2611/6 officers, only 270 tasks were performed by any member of the group. In terms of the overlap of the tasks performed, there is a correlation of .74 on the total tasks (the 330 tasks performed by some 267X) and a .67 correlation on the 270 tasks performed by some 261X officers. These data reflect a very substantial overlap between the two groups.

In terms of how the groups spend their time, there is a .60 correlation across all tasks and a .57 correlation on the 270 tasks performed by 261X officers. These figures suggest there is slightly less (yet still considerable) overlap between Behavioral Scientists and Scientific Managers in how they use their time. Another expression of this time-spent overlap is an actual percentage figure which quantifies the degree to which work time patterns are the same. This overlap between 267X and 261X officers is 64 percent. Thus, we can say that almost two-thirds of the work time of the two groups

is spent on the same or similar activities. Where the difference exists, they involve the additional tasks involving research data collection and manipulation for 267X officers, as shown earlier, or in some advanced supervisory and management tasks performed by Scientific Managers (as highlighted in Table 13).

This degree of overlap in tasks performed and in how the groups spend their time lends some credence to the proposed concept of having the behavioral science officers in a single ladder (the proposed 2671, 2674, 2676 progression) rather than grouping behavioral science managers with other scientific fields. The question becomes one of whether the Scientific Manager jobs are meant to be purely managerial and supervisory, or whether they have a role in the technical work of the scientific area. Since we have so few 2616 officers representing other scientific areas, it is not possible to reach a final conclusion based on the present data. An expanded study of all 2616 officers would be needed to make such a determination.

What can be done, however, is to more closely examine how the behavioral science job changes with progression in grade. Since there are more grade categories (second lieutenant through colonel) than just the two skill levels, examining the data by grade level will permit a finer serration of changes in the job over a full career.

TABLE 12

TASKS PERFORMED BY MORE BEHAVIORAL SCIENTISTS THAN SCIENTIFIC MANAGERS\*  
(PERCENT PERFORMING)

TASKS	2671/5 PERFORMING	2611/6 PERFORMING	DIFFERENCE BETWEEN GPS**
J164 COLLECT DATA FOR RESEARCH	48.0	10.8	37.2
J173 PLAN RESEARCH EXPERIMENTS OR RESEARCH SURVEYS	40.8	8.1	32.7
J180 SET UP EXPERIMENTAL DESIGNS	40.0	8.1	31.9
J171 PERFORM RESEARCH LITERATURE REVIEWS	43.2	13.5	29.7
J166 DESIGN SPECIAL INSTRUMENTS OR TECHNIQUES FOR RESEARCH	40.0	10.8	29.2
J167 DEVELOP OR TEST HYPOTHESES	40.0	10.8	29.2
J162 ARRANGE FOR PROCESSING OF RESEARCH DATA	42.4	13.5	28.9
E106 PARTICIPATE IN SEMINAR OR DISCUSSION GROUPS	44.0	16.2	27.8
J168 DIRECT STATISTICAL ANALYSIS OF DATA	43.2	18.9	24.3
J181 SUBMIT PROPOSALS FOR REVIEW OR EVALUATION	29.6	5.4	24.2
J160 ANALYZE RESEARCH DATA	55.2	32.4	22.8
J169 IDENTIFY RESEARCH REQUIREMENTS	47.2	27.0	20.2

\* Includes all tasks where the difference is greater than 20 percent more  
267X officers performing

\*\* Tasks are displayed in descending order of the difference



TABLE 13

EXAMPLES OF TASKS PERFORMED BY MORE SCIENTIFIC MANAGERS  
 THAN BY BEHAVIORAL SCIENTISTS\*  
 (PERCENT PERFORMING)

TASKS	2611/6	2671/5	DIFFERENCE
D81 CONDUCT BRIEFINGS	86.5	66.4	20.1
L203 DETERMINE PRIORITIES OF PROJECTS	45.9	25.6	20.3
B22 BRIEF OR ORIENT NEW PERSONNEL	64.9	43.2	21.7
G135 SERVE AS FOCAL POINT BETWEEN ORGANIZATION AND HIGHER HEADQUARTERS	45.9	23.2	22.7
.	.	.	.
.	.	.	.
B44 INTERVIEW OR SELECT MILITARY PERSONNEL FOR ASSIGNMENT	48.6	19.2	29.4
B55 WRITE MILITARY JOB DESCRIPTIONS	51.3	21.6	29.7
A14 RESOLVE PROBLEMS OR CONFLICTS (PROGRAM OR PERSONAL)	81.1	51.2	29.9
B54 WRITE CIVILIAN JOB DESCRIPTIONS	45.9	16.0	29.9
D82 CONDUCT STAFF MEETINGS	56.7	26.4	30.3
.	.	.	.
.	.	.	.
B50 REVIEW, APPROVE, OR DISAPPROVE WRITTEN REPORTS OR RECOMMENDATIONS SUBMITTED BY SUBORDINATES	67.6	27.2	40.4
A17 WELCOME VISITORS OR CONFERENCE GROUPS	78.4	36.0	42.4
B18 ADVISE COMMANDER OR MANAGEMENT ON PLANS OR POLICY	78.4	36.0	42.4
B46 REVIEW MANPOWER DOCUMENTS TO EVALUATE CURRENT OR PROJECTED MANNING STATUS	64.9	20.0	44.9
B49 REVIEW, APPROVE, OR DISAPPROVE TRAVEL REQUESTS	64.9	16.0	48.9

\* Examples of the 55 tasks where the difference was 20 percent or greater  
 in the direction of more 2611/6 officers performing

\*\* Table ordered in ascending order of the difference

## ANALYSIS OF JOB DIFFERENCES BY GRADE LEVELS

The types of tasks performed by Behavioral Scientists could be expected to change as an individual progresses in experience and grade. More senior people hold more responsible positions and often become supervisors of others. Thus, one way we can study how the job changes over time is to examine what tasks and jobs each rank or grade group perform presently.

Because of the diversity of jobs within the behavioral science area, it is appropriate to first recall the types of job for each grade group. Table 14 displays the distribution of jobs by grade. Note that there is only one job which only lieutenants perform (and that group involves only two FTD Human Factors officers). Only one other job (WAPS Test Development Psychologists) involves only lieutenants and captains. Most jobs are composed of individuals of several grades, and there are almost no distinct "company grade" jobs (as opposed to "field grade" jobs, except those noted above).

There are some jobs performed by only captains and majors, but these are typically very small groups and very specialized functions (see earlier discussion of job types). The jobs which are typically more senior (Program Managers and Chiefs) also include a sizeable number of captains and some lieutenants. As noted in the basic analysis of jobs, this Program Managers and Chiefs cluster is composed of a number of very specialized job variations, but the more senior individuals appear in several of those groups. The point here is that responsibility for program management and supervision is not restricted to just "field grade" Scientific Managers. Rather, most of the job types within the behavioral science area are composed of mixed military grades (and some civilians); thus, the leadership of the specialty is diffused across a number of grade levels and types of jobs. There is a general trend, however, of the more junior grades to be concentrated in entry-level or the basic professional jobs, with more senior personnel being primarily concentrated in managerial and supervisory jobs.

Given this kind of distribution of grades across jobs, we would expect to see a very mixed job description when task data are sorted by grades. This is, in fact, exactly the picture seen in such a description. When a lieutenant's description was generated, there were only 13 tasks (out of 330 in the USAF job inventory) performed by 50 percent of all lieutenants or greater. These lieutenant tasks involved activities such as:

Perform additional military duties, such as safety, disaster preparedness, or unit historian	72%
Read Air Force (or semi-official) recurring publications (AU Review, AF Times, Airman, etc.)	72%
Present briefings	70%
Prepare or proofread correspondence, such as memos, letters, or messages	70%
Answer telephone inquiries	67%
Read current periodicals and journals relating to field of endeavor	63%
Coordinate correspondence	60%
Attend off-duty college courses	58%

As can be seen from these tasks, none of these common lieutenant tasks are technical tasks. This finding reinforces the picture of a diverse specialty with several subspecializations where there is no common core of technical tasks.

When a similar job description was created for all captains, similar results were seen. There were only 17 tasks performed by 50 percent or more of all captains, which reflects the continuing diversity of behavioral science jobs.

When a difference description was run to highlight the difference between the tasks performed by lieutenants and captains, there were only two tasks performed by at least 20 percent more lieutenants. There were:

	(Percent)		
	Lts	Cpts	Diff
Attend off-duty college classes	58.1	28.6	29.5
Process item record cards	23.3	1.8	21.5

The college attending task indicates the difference in off-duty education with a much larger percentage of lieutenants in their initial assignment working on school. The second task is one unique to the WAPS Test Development Psychologist job group and is not performed by any other group (only one captain appeared in that work group).

There are, however, some 29 tasks which are performed by at least 20 percent more of the captains than the lieutenants. Examples of these tasks are given in Table 15. As can be seen from the nature of the tasks, most of the added responsibilities (that is, things that captains do that not as many lieutenants do) are either a function of some specialized job ("Conduct classroom instruction" of the USAFA Instructors) or are the initial responsibilities of management ("Monitor suspenses, review status of programs, etc.). Overall, there is a .79 correlation between lieutenants and captains in terms of tasks. The time-spent overlap between these groups is 68 percent, which reflects the very considerable commonality (and lack of major differences) between their jobs.

When the job descriptions for captains and majors are compared, there are no tasks where at least 20 percent more captains than majors perform. There are, however, 39 tasks that at least 20 percent more of the majors perform than captains. Examples of these tasks are shown in Table 16. Note that many of these tasks involve personnel administration. Other of the tasks involve the formulation of research programs or objectives or monitoring contracts. Thus, there are some differences in technical job content, as well as the increase in supervisory responsibilities (which is to be expected). The correlation of tasks for captains and majors is .87, and the time-spent overlap between the two grades is 77 percent. These figures indicate that despite the differences noted above, the jobs of captains and majors have a great deal in common (more so than between lieutenants and captains) and majors jobs are typically broader (more types of tasks performed).

The difference in tasks performed between majors and lieutenant colonels involved technical tasks, with more majors performing research tasks while more lieutenant colonels perform supervisory and management tasks. Examples of these differences can be seen in Table 17. Note that almost all of the tasks which more majors perform are technical research tasks; this indicates that lieutenant colonels have a less technical job in the sense of not performing basic data collection tasks, and fewer are involved in data analysis. The same data, however, also provides a picture of considerable commonality when three-quarters of all majors and almost one-half of all lieutenant colonels are performing technical tasks such "analyze results of research." Apparently, more of the lieutenant colonels are doing such analysis with data collected by others (subordinates or by contract). Overall, there is still substantial overlap in the jobs, with a time-spent overlap of 72 percent and a correlation across all tasks of .85.

Colonel's jobs are somewhat different from those of lieutenant colonels (and below). There are at least 96 tasks where the difference between colonels and lieutenant colonels, in terms of percent of the group performing, is greater than 20 percent; some examples of these differentiating tasks are displayed in Table 18. These data indicate that more lieutenant colonels are performing staff support functions, while colonels are more involved with command and management decisionmaking. Yet, the colonels are involved in the technical work as well, at least in terms of prioritizing the research to be done and identifying (or clarifying) specific research issues. They are also much more involved in human resources management, both in terms of selecting (or approving) military and civilian personnel for employment or promotion and in terms of receiving technical information from their subordinates.

This marked difference in tasks performed reflects a change in the job at the O-6 level. While there are still many tasks which both groups perform, the overlap in tasks is less than for lieutenant colonels with majors and below. The correlation of all tasks is .81 and the time-spent overlap is 68 percent. Thus, while the colonel's job represents a change in emphasis (from staff to executive management), many of the managerial and supervisory tasks are quite similar to those performed by lieutenant colonels.

Overall, the trends exhibited in the data when analyzed by grade groups, reflects an expected shift from emphasis on data collection and instrument design at the junior officer level, to an emphasis on research plans and executive decisionmaking at the more senior officer levels. As noted in the display of job group membership (Table 14), there is no clear-cut change in jobs by specific rank (that is, no jobs which are exclusively captain jobs versus majors jobs). Rather, the grades overlap in the job groups, and the tasks performed have considerable overlap between adjacent rank groups. Nonetheless, the general trend toward management of programs and executive supervision of technical and support personnel is very evident among the senior officer rank groups.

TABLE 14  
JOB GROUP MEMBERSHIP BY GRADE LEVEL  
(NUMBER IN GROUP)

JOB GROUPS	2LT	1LT	CAPT	MAJ	ETC	CGL	CIVILIAN
FTD HUMAN FACTORS ANALYSTS	1	1	0	0	0	0	0
WAPS TEST DEVELOPMENT PSYCHOLOGISTS	3	4	1	0	0	0	10
HUMAN FACTORS SCIENTISTS	1	2	3	1	0	0	0
RESEARCH SCIENTISTS	6	3	6	1	0	0	4
OCCUPATIONAL ANALYSTS	5	6	5	1	0	0	6
AFIT STUDENTS	0	2	1	3	0	0	0
USAFA INSTRUCTORS	0	2	8	2	0	0	0
SPECIAL PROJECT ANALYSTS	0	0	1	1	0	0	0
HQ SCIENTIFIC ANALYSTS	0	0	1	1	0	0	0
CONTRACT MANAGERS	0	0	1	1	0	0	1
ACTION OFFICERS	0	0	1	0	1	0	0
PROGRAM MANAGERS AND CHIEFS	0	5	19	29	21	7	13
TOTAL	16	25	50	39	22	7	35

TABLE 15

TASKS PERFORMED BY AT LEAST 20 PERCENT MORE OF  
CAPTAINS THAN LIEUTENANTS  
(PERCENT PERFORMING)

TASKS	LT	CAPT	DIFF*
B26 DETERMINE BUDGET PRIORITIES	4.6	25.0	-20.4
I152 PERFORM CAREER DEVELOPMENT COUNSELING	4.6	25.0	-20.4
N230 CONDUCT CLASSROOM INSTRUCTION	4.6	25.0	-20.4
E101 ATTEND IN-SERVICE EDUCATION PROGRAMS	16.3	37.5	-21.2
C68 MAINTAIN CORRESPONDENCE FILES	37.2	58.9	-21.7
B39 EVALUATE OR APPROVE BRIEFINGS	6.9	30.4	-23.5
K196 RECOMMEND FUTURE USES OF ADVANCED TECHNOLOGY	9.3	33.9	-24.6
.	.	.	.
.	.	.	.
.	.	.	.
C69 MONITOR SUSPENSES	23.3	53.6	-30.3
A15 REVIEW STATUS OF PROGRAMS OR ISSUES	20.9	51.8	-30.9
B47 REVIEW OR EVALUATE POSITION PAPERS	4.6	35.7	-31.1

\* Tasks displayed in ascending order of the difference

TABLE 16

EXAMPLES OF TASKS PERFORMED BY AT LEAST 20 PERCENT MORE  
OF THE MAJORS THAN CAPTAINS  
(PERCENT PERFORMING)

TASKS	CAPT	MAJOR	DIFF*
B29 DIRECT ADMINISTRATIVE ACTIVITIES	19.6	40.0	-20.4
A14 RESOLVE PROBLEMS OR CONFLICTS (PROGRAM OR PERSONAL)	51.8	72.5	-20.7
C70 PREPARE MEMORANDUMS OF AGREEMENT (MOA)	32.3	60.0	-20.7
B41 INITIATE OR APPROVE PERSONNEL ACTION REQUESTS	14.3	35.0	-20.7
J165 CONDUCT RESEARCH PLANS MEETINGS	23.4	42.5	-21.1
.	.	.	.
.	.	.	.
.	.	.	.
B54 WRITE CIVILIAN JOB DESCRIPTIONS	8.9	32.5	-23.6
E102 ATTEND SCIENTIFIC OR PROFESSIONAL CONVENTIONS OR CONFERENCES	58.9	82.5	-23.6
.	.	.	.
.	.	.	.
.	.	.	.
J169 IDENTIFY RESEARCH REQUIREMENTS	37.5	62.5	-25.0
J161 ANALYZE RESULTS OF RESEARCH	44.6	75.0	-30.4
B40 EVALUATE PERSONNEL PERFORMANCE	21.4	52.5	-31.1
B27 DEVELOP BUDGET REQUIREMENTS OR ESTIMATES	25.0	62.5	-37.5
B58 WRITE OR INDORSE OERs	12.5	50.0	-37.5

\* Displayed in ascending order of the difference

TABLE 17

EXAMPLES OF TASKS PERFORMED WHICH DIFFERENTIATE  
LIEUTENANT COLONELS AND MAJORS  
(PERCENT PERFORMING)

TASKS	MAJ	LTC	DIFF*
J170 IDENTIFY SPECIFIC RESEARCH PROBLEMS TO BE ADDRESSED	62.5	26.1	36.4
H141 MONITOR CONTRACTS IN TERMS OF TECHNICAL OR FINANCIAL ASPECTS	42.5	13.0	29.5
J164 COLLECT DATA FOR RESEARCH	45.0	17.4	27.6
J161 ANALYZE RESULTS OF RESEARCH	75.0	47.8	27.2
J165 CONDUCT RESEARCH PLANS MEETINGS	42.5	17.4	25.1
B23 CONDUCT OR PARTICIPATE IN GROUND SAFETY MEETINGS OR BRIEFINGS	37.5	13.0	24.5
.	.	.	.
.	.	.	.
.	.	.	.
* * * * * TASKS OMITTED WHERE THE DIFFERENCE IS LESS THAN 20 PERCENT * * * * *			
.	.	.	.
.	.	.	.
.	.	.	.
B51 SCHEDULE OR APPROVE LEAVES OR PASSES	50.0	73.9	-23.9
C66 INSPECT PROGRAM RECORDS OR DOCUMENTATION	32.5	56.5	-24.0
A2 ADVISE SUBORDINATES ON PERSONAL DECISIONS OR PROFESSIONAL DEVELOPMENT PLANS	57.5	82.6	-25.1
D82 CONDUCT STAFF MEETINGS	40.0	65.2	-25.2
.	.	.	.
.	.	.	.
.	.	.	.
B39 EVALUATE OR APPROVE BRIEFINGS	42.5	87.0	-44.5
B21 ASSIGN PERSONNEL TO DUTY POSITIONS	25.0	69.6	-44.6
B24 COORDINATE WITH CIVILIAN PERSONNEL OFFICE (CPO) ON CIVILIAN PERSONNEL MATTERS	27.5	73.9	-46.4
B43 INTERVIEW OR SELECT CIVILIAN PERSONNEL FOR EMPLOYMENT OR PROMOTION	20.0	73.9	-53.9

\* Tasks displayed in order of the magnitude of the absolute difference  
from + to -



TABLE 18

EXAMPLES OF TASKS PERFORMED WHICH DIFFERENTIATE  
LIEUTENANT COLONELS AND COLONELS  
(PERCENT PERFORMING)

TASKS	LTC	COL	DIFF%
D96 PROVIDE STAFF ASSISTANCE ON POLICY DECISIONS	60.9	14.3	46.6
D78 ACT AS STAND-IN FOR SUPERVISOR	73.9	28.6	45.3
E111 WRITE ARTICLES FOR PROFESSIONAL JOURNALS	43.5	.0	43.5
B45 PREPARE STATUS BOARDS, CHARTS, OR GRAPHS	69.6	28.6	41.0
F126 SERVE AS TECHNICAL CONSULTANT OR REPRESENTATIVE TO SCIENTIFIC MEETINGS, TECHNICAL BOARDS, OR COMMITTEES	39.1	.0	39.1
H142 PARTICIPATE IN CONTRACTOR BRIEFINGS OR REVIEWS	52.2	14.3	37.9
.	.	.	.
.	.	.	.
F125 SERVE AS CONSULTANT TO OTHER GOVERNMENT AGENCIES	34.8	14.3	20.5
J168 DIRECT STATISTICAL ANALYSIS OF DATA	34.8	14.3	20.5
*****			
TASKS OMITTED WHERE THE DIFFERENCE IS LESS THAN 20 PERCENT			
*****			
B42 INTERPRET POLICIES FOR SUBORDINATES	65.2	85.7	-20.5
B44 INTERVIEW OR SELECT MILITARY PERSONNEL FOR ASSIGNMENT	65.2	85.7	-20.5
.	.	.	.
.	.	.	.
B26 DETERMINE BUDGET PRIORITIES	69.6	100.0	-30.4
J170 IDENTIFY SPECIFIC RESEARCH PROBLEMS TO BE ADDRESSED	26.1	57.1	-31.0
L206 INTERACT WITH LATERAL MANAGERS TO RESOLVE TECHNICAL PROBLEMS	39.1	71.4	-32.3
L211 PROVIDE RESEARCH RESULTS OR FINDINGS TO USERS OR POTENTIAL USERS	39.1	71.4	-32.3
L213 RECOMMEND APPROVAL OR DISAPPROVAL OF RESEARCH REQUESTS	39.1	71.4	-32.3
.	.	.	.
.	.	.	.
B41 INITIATE OR APPROVE PERSONNEL ACTION REQUESTS	43.5	100.0	-56.5
A7 APPROVE SELECTION OR PROMOTION OF CIVILIAN PERSONNEL	39.1	100.0	-60.9
D94 PRESENT EXECUTIVE PROGRAM BRIEFINGS TO VIPs	39.1	100.0	-60.9
L207 LISTEN TO SUBORDINATES SUMMARIZE TECHNICAL PROBLEMS	34.8	100.0	-65.2

\* Tasks displayed in order of the magnitude of the absolute difference  
from + to -

## JOB ATTITUDES BY GRADE GROUPS

There is also systematic variation in the attitudes of Air Force Behavioral Scientists when the data are sorted by grade, with more senior personnel being more satisfied with their jobs. In addition, there has been an appreciable improvement in job attitudes among the more junior members of the specialty since 1981.

In terms of interest in their jobs, colonels and lieutenant colonels typically find their jobs interesting, as can be seen in Table 19. Note, however, that job interest of all ranks is very high and only a small percentage of any group feel their work is dull (or "so-so"). There is an overall trend toward better job satisfaction with increased grade, and the lieutenant's group has the most negative response (but only 12 percent rate their job dull).

When asked how their present job utilizes their talents, most Behavioral Scientists rated their job as using their talents "fairly well" to "perfectly", an overall positive response (see Table 19). In this case, the captains had the most negative response, with 18 percent of that group feeling their talents are used "very little" or "not at all." The trend toward a more positive response with advanced grade is best seen in the percentage of each group rating their talents used "excellently" to "perfectly." This increases from 16 percent among lieutenants to 71 percent among colonels.

A third standard job attitude question concerns the sense of accomplishment one gets from their job. With this question, as with the preceding two, the overall response was relatively positive for all grade groups. There is a slight trend across grades for the more senior individuals to be more satisfied with their accomplishments (see Table 19). Unlike the other questions, there is a 14 to 16 percent level of dissatisfied officers for all grades, but no write-in comments were made to explain any problem areas.

In interpreting these kinds of job attitude data, it may be more meaningful to have some other reference group against which the degree of positive (or negative) attitudes can be assessed. Fortunately, a similar set of job attitude questions were included in a major study of Professional Military Education which was completed earlier this year (Bell 1984). The PME sample included over 10,000 officers representing all officer specialties. Data from the PME study are displayed in Table 20 by grade groups, along with a summary of the Behavioral Scientists' attitudes displayed in the last three tables. The very small differences between Behavioral Scientists and Air Force officers, in general, are random (that is, they are higher for some questions and slightly lower for others--there do not appear to be any systematic differences). Thus, we can conclude that Behavioral Scientists are as interested in their jobs, and as satisfied, as are officers in other Air Force specialties.

Behavioral Scientists' job attitudes can perhaps most meaningfully be compared against the results of the 1981 267X survey (see Table 21). As has been demonstrated earlier, the "mainstream" jobs are much the same in 1984

as they were in 1981, although it is a dynamic and changing career field. The comparison of the incumbents attitudes for the two surveys indicates there has been some systematic change among grade groups. Present lieutenants find their jobs interesting, more feel their talents are well utilized, and more are satisfied with the sense of accomplishment from their work. Among the captains, however, there has been a slight decrease in the proportion who are interested and satisfied. Majors have a slightly higher percentage interested in their job and more find a sense of accomplishment, but are unchanged in terms of how they feel their jobs utilize their talents (88 percent for both 1981 and 1984). The data for lieutenant colonels shows some decrease across all job attitude questions, but their overall response is still highly positive (87 percent).

When viewed as a total set of data, it is obvious that most Behavioral Scientists have high job satisfaction and that attitudes among the most junior group (lieutenants) have improved between 1981 and 1984. These data appear to totally refute the image of a dissatisfied work force portrayed by Jacoby in 1970 ("The Plight of the Uniformed Air Force Psychologist, Professional Psychology"). Rather, most Air Force Behavioral Scientists appear to be a highly motivated, very positive group of professionals. Their attitudes have been improving over recent years (specifically between 1981 and 1984) and, while there are some problem areas (see earlier discussion of organizational climate among the various types of jobs), the overall status appears extremely positive. Where there are negative attitudes, they are typically focused in very specialized job groups (where only a limited set of tasks are performed).

TABLE 19

JOB ATTITUDES OF AIR FORCE BEHAVIORAL SCIENTISTS  
(PERCENT RESPONDING)

<u>ATTITUDE/LEVEL</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
<u>I FIND MY JOB:</u>					
DULL	12	11	5	9	0
SO-SO	5	9	12	4	0
INTERESTING	83	80	83	87	100
<u>MY JOB USES MY TALENTS:</u>					
NOT AT ALL OR VERY LITTLE	14	18	12	13	0
FAIRLY WELL TO VERY WELL	70	62	53	39	29
EXCELLENTLY TO PERFECTLY	16	20	35	48	71
<u>SENSE OF ACCOMPLISHMENT FROM THE JOB:</u>					
DISSATISFIED	14	16	15	13	14
NEUTRAL	5	5	0	0	0
SATISFIED	81	79	85	87	86

TABLE 20

COMPARISON OF BEHAVIORAL SCIENTISTS AND OTHER USAF OFFICERS 1984 JOB ATTITUDES  
(PERCENT RESPONDING)

ATTITUDE QUESTION	LT		CAPT		MAJ		LTC	
	26XX	USAF*	26XX	USAF*	26XX	USAF*	26XX	USAF*
I FIND MY JOB:								
INTERESTING	83	85	80	88	83	90	87	92
JOB USES TALENTS:								
FAIRLY WELL TO PERFECTLY	86	82	82	89	88	92	87	93
SENSE OF ACCOMPLISHMENT FROM JOB:								
SATISFIED+	81	78	79	81	85	82	87	85

\* Comparative USAF sample of 10,177 officers from all utilization fields collected in a study of Professional Military Education (Bell 1984)

TABLE 21

COMPARISON OF 1981 AND 1984 BEHAVIORAL SCIENTISTS' JOB ATTITUDES  
(PERCENT RESPONDING)

ATTITUDE/LEVEL	LT		CAPT		MAJ		LTC	
	1981	1984	1981	1984	1981	1984	1981	1984
I FIND MY JOB:								
INTERESTING	72	83	88	80	79	83	93	87
JOB USES TALENTS:								
FAIRLY WELL TO PERFECTLY	68	86	84	82	88	88	100	87
SENSE OF ACCOMPLISHMENT FROM THE JOB:								
SATISFIED+	72	81	84	79	79	85	86	87

## BACKGROUND INFORMATION

Other information collected in the survey is useful in furthering our understanding of Air Force Behavioral Scientists. These data, along with comments and interpretation, are summarized below.

Source of Commission. Data from the 1984 survey on the source of commission for behavioral science officers are displayed in Table 22. Presently, for second and first lieutenants, the major source is the USAF Academy, with 46 percent of present lieutenants being academy graduates. For majors, lieutenant colonels, and colonels, the primary source of commission is through the AFROTC program. Only among captains is the Officer Training School (OTS) the major source of officers. In terms of the total group (summarized across all grade groups), AFROTC accounts for 42 percent, OTS for 31 percent, and the USAF Academy for 25 percent.

Similar data from the 1981 survey are summarized in the lower half of Table 22 to show the change in officer procurement across the 3-year period. Note that in 1981, OTS was the primary source of new officers for the behavioral science field (lieutenants). At that time, AFROTC was a relatively minor source of 267X officers, primarily due to the limitation of the masters degree requirement--this requirement was being waived for USAF Academy graduates but not for OTS and AFROTC accessions. When the data from the 1981 survey were briefed to MPCYP and PALACE VECTOR in 1983, this point was discussed and noted as a problem area, particularly with the then short supply of new 267X officers. By comparing the 1981 lieutenant entries from AFROTC (7 percent of all 267X lieutenants) to the 1984 figure (21 percent), we can see the problem has been largely solved. This was done through better publicity for the Behavioral Scientist specialty in AFROTC and OTS recruiting and through better screening of potential candidates by PALACE VECTOR.

Currently, it would appear the USAF Academy is perhaps overrepresented in the lieutenants' group. Only six USAFA/DFLB graduates per year, however, are permitted to directly enter the 267X specialty by USAF policy. The "extra" proportion of USAFA graduates comes through the selective placement of USAFA graduates who become disqualified from a Flying Training Program. With alert screening of these individuals, PALACE VECTOR has been able to increase the flow of highly qualified individuals into the specialty.

The difference between the 1981 and 1984 data can also give some idea of dynamic changes during the 3-year period. For example, USAFA graduates accounted for 36 percent of the 1981 lieutenants group, but account for only 23 percent of the 1984 captains group. This reduction of the proportion of USAFA graduates in the same year group over a 3-year period is probably a function of the movement of some USAFA graduates out of the career field. Several were selected for AFIT graduate programs in other academic areas (particularly Industrial Engineering as an input to the 2724 specialty). Others have left 2675 assignments for special assignments (such as Air Staff

Training - the ASTRA program, medical school, legal training, or flying training). The high selectability of USAFA graduates for such special training or assignment programs results in less retention in the behavioral science field for them; thus, the reduction in proportion of such USAFA graduates between lieutenant and captain.

The proportions for each grade by source of commission will continue to change in the next few years, particularly as the proposed AFR 36-1 change takes effect. With only a bachelor's degree in psychology or a related science required to enter the field, the proportion of AFROTC and OTS graduates should increase. This will be particularly true during the years in which new human factors positions are authorized (FY86-88) and as the total number of authorizations for the specialty increases.

Education Level. The present level of education of Behavioral Scientists is shown in Table 23 to provide a perspective on the relative qualifications of the present population of the specialty. Note that 7 percent of all lieutenants and 2 percent of all captains hold only a bachelor's degree, while 54 percent of the lieutenants and 2 percent of the captains have a bachelor of arts or science degree plus additional course work. Field grade officers, on the other hand, all hold at least a master's degree. Clearly, the pursuit of a master's degree is something which is occurring primarily in the initial assignment as a 267X officer or, at the latest, as a captain. In addition, for captains and above, the majority of each grade group have work beyond the master's level (54 to 57 percent of captains to 85 percent of the colonels report post-master's courses or degrees). From this trend in the data, we can conclude that for most Behavioral Scientists, their professional education as a psychologist is a continuing process and for most, the master's is not a terminal degree.

This conclusion is reinforced by the data displayed in Table 24, which displays the number of degrees earned since the individual came on active duty (Note: USAFA graduates interpreted this question to include their academy experience as part of their active duty--the question did not limit responses to just time as an officer). Note that, with the exception of the lieutenants' group, the majority of all rank groups have earned at least one academic degree since entering active duty. Twenty to thirty percent of captains through lieutenant colonels have earned two degrees and 71 percent of the colonels have achieved two degrees since entering the USAF. Thus, continuing academic education is a "way of life" for the majority of USAF Behavioral Scientists.

For most officers, this continuing education is being accomplished through off-duty education programs (see Table 25) for master's degrees. For the doctoral level, a program in a civilian university, under the sponsorship of AFIT, is the most likely course of acquiring a Ph.D. or equivalent degree (see Table 26). The higher the rank (and therefore the more years of service), the more likely an officer is to have attended an AFIT-sponsored doctoral program (11 percent of the captains to 57 percent of the colonels). This difference between the method of obtaining a master's and a doctorate is a function of both the difference in the length of programs and availability of



off-duty educational programs. Master's programs are readily available at or near most Air Force bases, while doctoral programs are relatively unavailable at or near most bases. Most universities disapprove of part-time doctoral education and discourage off-duty participation. Various attempts to arrange special off-duty doctoral programs have not been successful. For example, in the 1960s, the AFHRL set up a doctoral program in psychology with Baylor University, which was conducted in San Antonio. While a sizeable number enrolled, few ever completed the program and it was quietly dropped by the early 1970s. During the late 1970s, several attempts were made to set up a doctoral program with one of the universities in San Antonio (where there are over a hundred military and civilian employees who are qualified and interested in a psychology Ph.D. program). To date, this effort has met with negative results.

At the master's level, most Behavioral Scientists involved in pursuing a degree specialize in psychology, although some chose a program in guidance and counseling or business and management (see Table 27). For those in a psychology program, there is a reverse trend by grade; the more junior officers are more likely to have a psychology major, while colonels are just as likely to have a master's in business or management (including organizational development).

This trend does not hold true at the doctoral level (see Table 28). For Ph.D. programs, the more senior the individual, the more likely the academic specialization is to be in psychology. These trends at the master's and doctoral level may be related to the method or sponsorship data displayed earlier in Tables 25 and 26, since master's programs are more likely to be off-duty education where doctoral programs are more apt to be AFIT-sponsored. The individual has a greater choice of specialization in an off-duty program, while the AFIT programs are clearly specified in terms of which academic program the individual will attend. Almost all the AFIT-sponsored programs which have an "entry AFSC" of 2675 will be specified as psychology programs (either Industrial/Organizational, Human Factors, or Psychometrics). In some cases, another academic major will be needed, particularly if the AFIT-sponsored program is as preparation for a special assignment (such as teaching at the USAF Academy). Note, for example, that 2 percent of the captains (which equals one individual) hold a doctorate in Anthropology (see Table 28). One doctoral program in Anthropology was sponsored by AFIT under the USAFA Preparatory quota. This individual is now responsible for teaching anthropology courses in the USAFA curriculum.

Within the broad academic area of psychology, there are a number of subspecializations. The psychological specializations of those holding a master's or Ph.D. degree are displayed in Table 29.

Industrial/Organizational Psychology is the most likely specialization for master's and doctoral programs, followed by Experimental, Counseling and Guidance, and Human Factors. In interpreting the data in this table, please remember that lieutenants and captains are more likely to hold a master's as their highest degree (or are currently working on one), while major's, lieutenant colonels, and colonels are more likely to have a doctorate. Also remember that some programs which may appear as unlikely to be sponsored

The causes of this lack of professional involvement are not immediately obvious. There were no write-in comments which would help us understand the issue. In discussions with various 267X officers, the high cost of APA membership (roughly \$100+ per year) and the stringent requirement for a Ph.D. for full membership are mentioned as factors. Yet, alternative organizations, such as the Military Testing Association (which has no annual dues and no academic requirements for membership) have lower percentages than APA. Some of the DAF civilian professional Personnel Psychologists have pointed out that there are no rewards in the Air Force system for professional memberships and that participation in professional meetings is often difficult or at least unpredictable (because of the uncertainties of TDY funding each year). Their implication is, of course, that the Air Force does not value such professional involvement and provides no incentives for active participation.

It would appear that there is no uniform management policy in the Air Force which either encourages or discourages membership in professional psychological organizations, even though such professional involvement is an accepted professional obligation for most psychologists in the United States. For Clinical Psychologists in the USAF, there is a Society of Air Force Clinical Psychologists (SAFCP) which meets annually, and which publishes a quarterly quasi-official newsletter (FOCUS). Most Air Force Clinical Psychologists (AFSC 9186) are also members of the American Psychological Association and currently are preparing to institute a certification program to meet the requirements of most states for health care professionals. Clinical Psychologists in the Air Force are a part of the Biomedical Sciences Corps (and are not line officers) and have their own BSC Associate Director for Clinical Psychology, who serves as a functional manager for assignments, selections for training programs, and career management. The "line" Behavioral Scientists in the USAF have no single-point functional manager per se, and this lack of focused leadership is reflected in the lack of consistent management policies for things such as professional memberships and participation in professional conferences and meetings.

This lack of a functional manager for the behavioral science field encourages the various subspecializations to develop their own leadership. For example, the Air Force Systems Command functional manager for human factors provides a point of contact and focus to the human factors area for the entire Air Force. Thus, for the human factors area, we see more professional identification (discussed earlier in the analysis of specialty jobs) and a more active role in channeling the future of that area (i.e., the present AFSC proposal to reestablish a separate shredout for human factors, which implies separate assignment and career development programs). This trend is a healthy development in one sense, in that command and management attention has been focused on the Human Factors area and some very rational decisions made about the future directions of HFE functions in the Air Force. It does accentuate, however, the lack of such single-point functional leadership and direction in the other behavioral science areas. This is a problem which needs attention and resolution if the behavioral science specialty is to become a more effective force in Air Force research and applications for manpower, personnel, and training.

BEHAVIORAL SCIENTISTS (AFSC 2675) SCIENTIFIC MANAGERS  
(AFSC 26169) AND RE. (U) AIR FORCE OCCUPATIONAL  
MEASUREMENT CENTER RANDOLPH AFB TX J L MITCHELL ET AL.

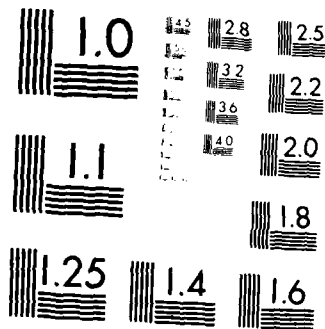
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MICROCOPY RESOLUTION TEST CHART  
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by AFIT (for example, Counseling and Guidance) may be part of a special program such as the USAFA Faculty Preparatory quota (in fact, the USAFA/DFBL operates a Cadet Counseling Center and some individuals were sponsored for advanced academic degree programs in preparation for duty in that type of work).

Finally, a question was asked in the USAF job inventory about the degree to which their advanced degree in psychology or a related area was very useful in the performance of their current job. Respondents were asked to rate their agreement or disagreement on a 7-point scale ranging from 1 (strongly disagree) to 4 (neither agree or disagree) to 7 (strongly agree) that their advanced academic program was very useful in job performance. A summary of responses to this question is shown in Table 30.

In general, the more senior the individual, the more likely he or she is to feel their advanced degree in psychology or a related area was useful to their job performance. In interpreting these data, please remember that the more senior individuals are also more likely to hold a doctorate; thus, the trends seen in Table 30 are confounded somewhat by degree level (and years of experience as well). Nonetheless, there is a very clear trend for more senior individuals to find their academic background has contributed positively to their performance of their present job.

Professional Organizations. Job incumbents were also asked in which professional organizations they hold membership. The objective of this question was to assess the degree of professional involvement of Air Force Behavioral Scientists in psychology-related organizations. Responses to this question are summarized in Table 31.

On the average, only about one out of every five Air Force Behavioral Scientists or Scientific Managers is involved with the American Psychological Association, which is the major professional organization for psychologists in the United States. Even less a proportion belong to other professional organizations, with the notable exception of the colonels, 57 percent of whom belong to the Human Factors Society. Also, the majority of both lieutenant colonels and colonels indicated they belong to some other professional organizations; the types of organizations they identified include: The Ergonomics Society, American Society for Public Administration, Society for Applied Learning Technology, American Statistical Association, American Anthropological Association, Academy of Management, American Educational Research Association, and various counseling organizations. Typically, only one or two individuals belong to any given organization, and these are typically more senior individuals (senior captains, majors, and lieutenant colonels).

Overall, these data seem to portray a general lack of any systematic involvement in the wider professional community by Air Force Behavioral Scientists. Only about 20 percent are involved in APA and smaller percentages in other psychological organizations. Often the individual who is active in APA is also the person who belongs to another professional organization (whether it be the Human Factors Society or a counseling association). Thus, what professional involvement there is in the behavioral science area seems to be largely focused on a relatively small core of individuals, roughly only one out of five or six officers.

Professional Military Education. Another area of professional involvement for Air Force Behavioral Scientists is their role and development as military officers. The participation of Behavioral Scientists in Professional Military Education (PME) is summarized in Table 32.

About two-thirds of the lieutenants and 20 percent of the captains have no PME courses completed, while all lieutenant colonels and colonels have accomplished some type of PME. Sixty-three percent of all captains have accomplished Squadron Officers School in residence, as well as 70 percent of the majors. At least some captains and majors (and perhaps others) completed both correspondence and resident SOS courses.

At least 63 percent of the majors and 65 percent of the lieutenant colonels completed Air Command and Staff College through one program or another. Thus, at least through lieutenant colonel, there is a very positive correlation between PME completion and advanced grade. This trend does not hold true, however, for the colonels in the sample in that few of them completed SOS or ACSC in residence, and less than half completed these courses by other means. None of the colonels attended Air War College and only two out of the seven colonels in the sample completed AWC at all.

Overall, the data presented in Table 32 show a rather healthy involvement on the part of Air Force Behavioral Scientists with PME programs. The majority at each grade have completed the PME relevant to their level (about two-thirds), with the exception of the colonels. It is clear that colonels in this sample earned their rank in spite of their lack of involvement with senior PME and quite contrary to the popular concept of PME as a requirement to promotion. In their cases, promotion boards may have weighed their advanced academic education (and probably their specific assignment opportunities) more heavily.

The excellent participation of most Behavioral Scientists in PME courses stands in contrast to the preceding discussion of their lack of involvement in professional organizations. The difference in involvement in the two areas strongly suggests that their greater identification is with their role as military officers as opposed to professional identity as psychologists.

Survey respondents were also asked to rate (on a 7-point agreement scale) their agreement or disagreement with the statement, "The PME training I have had has been very useful in the performance of my current job." Their ratings of this question are summarized in Table 33.

The data displayed in Table 33 does not show any substantial agreement as to the general usefulness of PME training in on-the-job performance. For most of the groups (captains through colonels), the distribution of responses appears bipolar--people seem to disagree strongly or moderately or agree to the same level; few are neutral about the issue. We must conclude there is no consistent attitude about the usefulness of PME to Air Force Behavioral Scientists (although as shown earlier, most career officers are completing their PME). If anything, the data displayed has a slight tendency toward the positive (for example, if the categories of agree and disagree are summed, then 39 percent of the majors disagree, but 56 percent agree their PME is useful to their job).

Career Plans. Another important area for our understanding of the Behavioral Scientists in the Air Force is their future intentions. Survey respondents were asked to indicate their long-term career plans. Their responses are summarized in Table 34 for the various grade groups. As might be anticipated, many of the lieutenants (30 percent) are undecided about their future. An equal number (30 percent) expect to remain Behavioral Scientists (AFS 2675) for the remainder of their careers, as do 30 percent of the captains and 35 percent of the majors. These data suggest there is a core of career Behavioral Scientists who plan on remaining in the career field until retirement. Note that 14 percent of the colonels also indicated they would remain a 2675 until retirement, even though the 2675 is authorized a grade spread of second lieutenant through lieutenant colonel. This 14 percent represents 1 individual (total number of colonels = 7). Since this was an unusual response, the colonel was contacted by phone to obtain an explanation of his status. He indicated he is in a unique job which he has held (except for one year away) for the last 13 years. He has been promoted from major to colonel in the same position. He also indicated that he would remain in the same position until retirement because of the unique responsibilities and need for continuity in a critical program. By retaining the non-colonel specialty code, his unique status is somewhat officially recognized and he is not threatened with automatic reassignment.

There is a natural trend toward decreasing intentions to remain in the 2675 field as rank increases and conversely, of increasing intentions to be in the scientific area but not necessarily 2675 as rank increases. These trends could be interpreted as normal expectation of progression to the staff level, as a 2616 Scientific Manager at the field grade level. If we sum the number expecting to remain 2675 officers with those expecting to stay 26XX, then 44 percent of the lieutenants and captains and 72 percent of the majors and lieutenant colonels anticipate remaining in the 26XX scientific area. These figures argue for a well motivated career force of Behavioral Scientists, and speaks well for future retention.

(Historic note - in the years prior to 1970, almost all officers entering the 2675 area came from other career fields; very few entered the field as second lieutenants and remained for a full career in this specialty. About 1970, however, some individuals, particularly some USAF Academy graduates, entered who have continued in the 2675 field as their only Air Force specialty. These officers are now majors who are up for selection for lieutenant colonel. These "career" Behavioral Scientists may now be functioning as a "role model" for many of the lieutenants and captains who are currently entering the specialty.)

Other data in Table 34 which particularly need to be noted are shown on the line concerning those who plan to separate from the USAF before retirement. Note that only 2 percent of the lieutenants, 7 percent of the captains, and 3 percent of the majors plan to leave the Air Force before retirement eligibility. These data reinforce the picture developed above of a career motivated force of Behavioral Scientists. These figures can be compared to Air Force officers in general, based on data collected in a study of Officer PME (Bell 1984). In that study of over 10,000 officers, 10 percent of the

lieutenants, 22 percent of the captains, and 13 percent of the majors indicated they would probably leave the USAF before reaching retirement eligibility (Ibid., Table 16). When the data for Behavioral Scientists cited above are contrasted with the PME study data, the Behavioral Scientists are clearly more career motivated as a group than the general Air Force officer population.

Career Aspirations. One final question in the background section of the USAF job inventory asked respondents to indicate the highest officer rank to which they aspire before retirement. Responses to this question are summarized in Table 35.

Note that the percent of lieutenants who plan to leave before retirement in this table (5 percent) is higher than was reported in the previous table (2 percent), but is still only half the figure reported above for Air Force lieutenants in general. The figure for captains (7 percent) is the same for both questions. This repeated response situation permits some assessment of the consistency and reliability of our data; the difference in response is at most no more than  $\pm 3$  percent. The average "error" is less than 3 percent since captains responded exactly the same to both questions. In any case,  $\pm 3$  percent is a very acceptable reliability for survey questionnaires.

Also note in Table 35, the majority of Behavioral Scientists who aspire to the rank of lieutenant colonel or colonel, which also indicates very positive long-term career goals. Quite realistically, more of those who are presently colonels aspire to be a general officer than do those who are now majors and lieutenant colonels. In this regard, also note that lieutenants and colonels are more apt to aspire to general officer status than do the other groups; again, this result might be expected.

The overall patterns of career rank aspirations portrayed in Table 35 suggest that most Air Force Behavioral Scientists want to have a full and successful military career. This conclusion strengthens the analysis of data in the previous table which was interpreted as showing Behavioral Scientists as a highly motivated group of career Air Force officers.



TABLE 22

SOURCE OF COMMISSION OF AIR FORCE 26XX OFFICERS  
(PERCENT RESPONDING)

## 1984 DATA -

<u>COMMISSIONING PROGRAM</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
OFFICER TRAINING SCHOOL	33	39	22	30	0
AFROTC	21	30	58	70	86
USAF ACADEMY	46	23	20	0	14
OTHER (OCS, AV. CADETS, ETC.)	0	8	0	0	0

## 1981 DATA -

OFFICER TRAINING SCHOOL	55	31	24	30	0
AFROTC	7	51	62	43	0
USAF ACADEMY	36	18	10	7	0
OTHER (AVIATION CADETS, ETC.)	0	0	0	0	100

TABLE 23  
HIGHEST LEVEL OF EDUCATION OF USAF BEHAVIORAL SCIENTISTS  
(PERCENT RESPONDING)

<u>EDUCATION LEVEL</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
BACHELORS DEGREE ONLY	7	2	0	0	0
BA/S PLUS COURSE WORK	54	2	0	0	0
MASTERS DEGREE	14	39	20	26	14
MA/S PLUS COURSE WORK	16	41	43	30	14
Ph.D. OR EQUIVALENT DEGREE	7	13	38	39	71
OTHER (PROFESSIONAL DEGREE, ETC.)	0	3	0	4	0

TABLE 24  
NUMBER OF ACADEMIC DEGREES EARNED SINCE ENTERING THE USAF\*  
(PERCENT RESPONDING)

<u>NUMBER OF DEGREES EARNED</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
NONE SINCE ENTERING USAF	60	20	20	13	14
ONE	33	50	55	48	14
TWO	7	21	22	30	71
THREE	0	7	3	9	0

\* Includes undergraduate USAF Academy

TABLE 25

METHOD USED TO EARN MASTER'S DEGREE SINCE ENTERING USAF\*  
(PERCENT RESPONDING)

<u>METHOD TO EARN MASTERS</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
AFIT	5	34	32	30	57
BOOTSTRAP	5	4	8	0	0
OFF-DUTY EDUCATION PROGRAMS	56	43	33	39	0
OTHER	12	2	5	4	0

\* Includes those currently working on a master's degree

TABLE 26

METHOD USED TO EARN A DOCTORAL DEGREE SINCE ENTERING USAF\*  
(PERCENT RESPONDING)

<u>METHOD USED TO EARN Ph.D.</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
NONE - NOT EARNED	77	77	52	39	29
AFIT	0	11	27	43	57
BOOTSTRAP	0	2	3	0	0
OFF-DUTY EDUCATION PROGRAMS	9	9	12	9	14
OTHER	2	2	3	4	0

\* Includes those currently working on a doctoral degree

TABLE 27

AREA OF SPECIALIZATION OF MASTER'S DEGREE HOLDERS  
(PERCENT RESPONDING)

<u>ACADEMIC AREA</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
ACCOUNTING-FINANCE	2	2	0	0	0
ANTHROPOLOGY	0	2	0	4	0
BUSINESS, MANAGEMENT, OR ORG. DEV.	2	9	17	9	29
EDUCATION	0	2	5	4	0
ENGINEERING	2	2	0	9	14
ENGLISH	0	2	0	0	0
GUIDANCE AND COUNSELING	7	18	12	9	14
HISTORY	0	0	0	5	0
INDUSTRIAL ENGINEERING	5	11	0	4	0
PSYCHOLOGY	67	50	58	39	28
OTHER	21	14	5	35	14

TABLE 28

AREA OF SPECIALIZATION OF DOCTORAL DEGREE HOLDERS\*  
(PERCENT RESPONDING)

<u>ACADEMIC AREA</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
NONE	77	68	40	35	29
ANTHROPOLOGY	0	2	0	0	0
BUSINESS, MANAGEMENT, ORG. DEV.	0	0	0	4	14
EDUCATION	5	2	5	9	0
ENGINEERING (INCLUDES INDUSTRIAL)	0	2	0	5	0
GUIDANCE AND COUNSELING	0	5	3	4	0
PSYCHOLOGY	9	20	43	26	43
OTHER	0	2	8	13	14

\* Includes those earning degrees prior to entry in the USAF and those in off-duty programs

TABLE 29

AREA OF SPECIALIZATION OF HIGHEST LEVEL ACADEMIC DEGREE HELD  
(PERCENT RESPONDING)

<u>BEHAVIORAL SCIENCE SPECIALIZATION</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
CLINICAL	9	5	0	0	0
COUNSELING AND GUIDANCE	9	18	8	17	14
DEVELOPMENTAL	0	0	0	0	0
EDUCATIONAL	0	2	5	13	14
INDUSTRIAL/ORGANIZATIONAL	26	18	23	9	29
PERSONALITY	2	0	3	0	0
PSYCHOLOGICAL WARFARE	0	0	0	0	0
PSYCHOMETRICS	0	2	0	0	0
SOCIAL	2	2	0	4	0
QUANTITATIVE	2	0	0	0	0
EXPERIMENTAL	9	9	25	0	14
HUMAN FACTORS	14	20	8	4	0
GENERAL	9	7	0	4	0
CONSUMER	0	0	0	0	0
OTHER	7	4	10	4	0

TABLE 30

USEFULNESS OF ADVANCED DEGREE IN JOB PERFORMANCE  
(PERCENT RESPONDING)

<u>LEVEL OF AGREEMENT</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
STRONGLY DISAGREE	9	16	5	0	0
MODERATELY DISAGREE	5	2	5	0	0
SLIGHTLY DISAGREE	0	5	0	0	0
NEITHER AGREE OR DISAGREE	0	7	0	0	4
SLIGHTLY AGREE	7	7	5	13	0
MODERATELY AGREE	14	23	15	4	71
STRONGLY AGREE	12	30	50	48	14
OTHER*	54	9	20	30	14

\* Other includes those who do not have an advanced degree or whose degree is not psychology or a related area

TABLE 31  
MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS  
(PERCENT RESPONDING)

<u>ORGANIZATION</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
AMERICAN PSYCHOLOGICAL ASSOCIATION	22	11	23	26	28
Student Affiliate	(12)	( 2)	( 3)	(13)	( 0)
Associate Member	( 5)	( 5)	( 5)	( 0)	(14)
Member (requires Ph.D.)	( 5)	( 4)	(15)	(13)	(14)
HUMAN FACTORS SOCIETY	19	21	20	13	57
AMERICAN MANAGEMENT ASSOCIATION	0	4	8	0	14
MILITARY TESTING ASSOCIATION	12	13	18	13	0
SOCIETY OF AVIATION PSYCHOLOGY	2	4	12	9	0
OTHER	19	20	20	57	57

TABLE 32

PROFESSIONAL MILITARY EDUCATION COURSES COMPLETED  
(PERCENT RESPONDING)

PME COURSES	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
NONE COMPLETED	74	20	3	0	0
SQUADRON OFFICERS SCHOOL (RESIDENCE)	5	63	70	39	14
SQUADRON OFFICERS SCHOOL (CORRESPONDENCE)	16	46	60	52	43
AIR COMMAND & STAFF COLLEGE (RESIDENCE)	0	0	8	26	29
AIR COMMAND & STAFF COLLEGE (CORRESPONDENCE)	0	21	63	65	43
AIR WAR COLLEGE (RESIDENCE)	0	0	0	4	0
AIR WAR COLLEGE (SEMINAR)	0	0	10	9	14
AIR WAR COLLEGE (CORRESPONDENCE)	0	0	8	22	14
ARMED FORCES STAFF COLLEGE	0	0	0	4	14
INDUSTRIAL COLLEGE OF THE ARMED FORCES	0	0	0	0	14
INDUSTRIAL COLLEGE OF THE ARMED FORCES (CORRESPONDENCE)	0	0	15	48	29



TABLE 33  
USEFULNESS OF PME COURSES IN JOB PERFORMANCE  
(PERCENT RESPONDING)

<u>LEVEL OF AGREEMENT</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
STRONGLY DISAGREE	2	21	13	4	0
MODERATELY DISAGREE	5	16	18	27	29
SLIGHTLY DISAGREE	5	2	8	17	0
NEITHER AGREE OR DISAGREE	2	9	8	9	14
SLIGHTLY AGREE	5	21	30	17	29
MODERATELY AGREE	5	11	23	13	0
STRONGLY AGREE	2	7	3	13	14
OTHER*	74	12	0	0	14

\* Includes those who have not completed any PME courses

TABLE 34

CAREER FIELD PLANS OF AIR FORCE BEHAVIORAL SCIENTISTS  
AND SCIENTIFIC MANAGERS  
(PERCENT RESPONDING)

<u>RESPONSE CATEGORY</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
PLAN TO REMAIN IN THE 267X AREA	30	30	35	22	14
REMAIN SCIENTIFIC (26XX) BUT NOT NECESSARILY 267X	14	14	37	48	43
WILL CROSSTRAIN INTO NEW AREA	16	7	2	13	0
UNDECIDED	30	16	8	4	14
PLAN TO SEPARATE BEFORE RETIREMENT	2	7	3	0	0
RATED SUPPLEMENT OR CAREER BROADENING	0	7	12	0	14
OTHER*	7	18	3	13	14

\* No response given or another alternative written in

TABLE 35

HIGHEST RANK ASPIRED TO BEFORE RETIREMENT  
(PERCENT RESPONDING)

<u>RANK ASPIRED</u>	<u>LT</u>	<u>CAPT</u>	<u>MAJ</u>	<u>LTC</u>	<u>COL</u>
PLAN TO LEAVE BEFORE RETIREMENT	5	7	0	0	0
MAJOR	5	9	8	0	0
LIEUTENANT COLONEL	28	25	55	39	0
COLONEL	37	46	32	57	71
BRIGADIER GENERAL OR HIGHER	21	11	3	9	29

## CONCLUSIONS AND IMPLICATIONS

The data developed in this occupational survey indicates that the USAF Behavioral Scientist (AFSC 2675) is a very diverse occupation, which includes jobs ranging from the (bench-level) task scientist to senior managers and executives. There are several "entry-level" or "journeyman" professional jobs which are very specialized to a specific function or program (such as the WAPS Test Development Psychologists, Occupational Analysts, Human Factors Psychologists, and USAFA/DFBL Instructors). As an individual progresses in grade and experience, the jobs available are primarily staff and plans types positions and, for the most senior individuals, executive management.

The information developed was used to evaluate the proposed change to AFR 36-1 and strong positive support was given to the proposal. A separate shredout for the human factors area seems justified, and the elimination of the master's degree requirement for entry-level jobs appears realistic. The change will necessitate some type of systematic revalidation of which career field positions actually require an advanced degree.

The present structure of merging the Behavioral Scientist with several unrelated scientific specialties (Chemists, Physicists, Nuclear Scientists, etc.) at the Scientific Manager (2616) level was questioned. The present senior staff structure makes career progression and planning ambiguous and may actually encourage migration to other areas (such as 2716 or 7516). In some cases, organizations are apparently choosing to designate even their senior positions as 2675 to ensure qualified Behavioral Scientists are assigned. This is inferred by the overlap in senior jobs of 2675 and 2616 officers. An alternative AFSC structure was proposed which would create three levels within the Behavioral Scientist AFSC (2671-2674-2676), which has historical precedent in the early 1950s.

When job attitudes were examined, a very positive overall picture emerged of Air Force Behavioral Scientists as interested in their jobs and highly motivated for a full military career. There has been a very positive improvement between 1981 and 1984. A few possible problem areas were noted, such as considerable dissatisfaction of Human Factors Scientists with the organizational climate of their organization (although they had high interest in their job). The specific causes for this dissatisfaction are not known, but they may be partially resolved with the recognition (and separate career management) of Human Factors Psychologists as a separate shredout.

Air Force Behavioral Scientists hold about the same very positive job attitudes as the majority of Air Force officers, but they are more likely to remain in the USAF than officers in general. The majority want to remain in the scientific (26XX) area, but only about 30 percent expect to remain as 2675 officers their entire career. The majority aspire to being lieutenant colonel or colonel by the time they reach retirement eligibility, but some hope to progress to the general officer level (some lieutenants and some colonels). Thus, members of this specialty appear to be interested, motivated individuals who anticipate a full career with the Air Force as officers and scientists.

Normally, when an OSR is completed for a specialty, a Utilization and Training (U&T) Workshop is convened to allow functional managers and representatives of major using organizations to assess problems and recommend potential solutions. Since there are some unresolved issues in the Behavioral Scientist specialty, recommend that such a workshop be called to consider the future directions of the behavioral science area in the Air Force. Since there is no formal training program for the 2675 area, perhaps HQ USAF/MPXOA or MPCMC should take responsibility for initiating a U&T workshop.

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APPENDIX A  
SPECIALTY DESCRIPTIONS FOR AFSCs 267X AND 261X

## OFFICER AIR FORCE SPECIALTY

## BEHAVIORAL SCIENTIST

## 1. SPECIALTY SUMMARY

Conducts research to identify, quantify, predict, and control behavior of humans and variables affecting behavior. May experiment with animals in comparative research. Studies behavior as manifested either individually or in groups, and its interaction with machines.

## 2. DUTIES AND RESPONSIBILITIES

a. *Conducts research.* Plans and executes research on human and animal sensory, motor, emotional and intellectual processes, including social development and behavior, motivation, aptitudes, communication and man-machine relationships. Develops and tests hypotheses, plans and conducts experiments and surveys, designs special instruments or techniques, analyzes and reports results.

b. *Conducts applied research.* Applies information from basic research to solution of specific Air Force problems. Devises any special instruments necessary, plans and executes experiments, analyzes and reports the results.

c. *Monitors and performs liaison and consultative activities.* Develops research proposals and monitors contracts for solicited and unsolicited research conducted on a contractual basis. Serves as liaison between Air Force and

scientific community, including civilian, industrial and other government agencies. Maintains records pertaining to research projects. Reviews professional literature to keep abreast of behavioral sciences developments. Serves as technical consultant and (or) representative to scientific meetings, technical boards, and committees.

d. *Manages behavioral sciences research and development.* Coordinates behavioral sciences programs, projects and activities with related and interested agencies. Plans, organizes, and directs laboratories, field units, and staff agencies. Provides staff supervision over behavioral sciences activities and programs. Performs as staff officer and manager in positions requiring technical specialization in behavioral sciences.

## 3. SPECIALTY QUALIFICATIONS

a. *Knowledge.* Knowledge is mandatory of Air Force research policies, procedures and management practices as they apply to behavioral science activities.

b. *Education.*

(1) Master's degree in human engineering or psychology is mandatory for entry into the specialty.

(2) Doctorate in human engineering or psychology is

desirable.

c. *Experience.* A minimum of 24 months' Air Force experience performing basic or applied research in the field of specialization or a related field is mandatory. Up to 12 months' experience in Air Force instructing in behavioral science or psychology may be applied toward the minimum experience requirement.

## 4. SPECIALTY DATA

a. *Grade Spread.* Second lieutenant through lieutenant colonel

b. *Related DOD Occupational Group:* 5E



## OFFICER AIR FORCE SPECIALTY

### SCIENTIFIC MANAGER

#### 1. SPECIALTY SUMMARY

Directs, formulates, manages, evaluates, and coordinates research and development programs and projects. Acts as executive manager of large and diverse scientific organizations, and supervises scientific research activities.

#### 2. DUTIES AND RESPONSIBILITIES

a. *Formulates research objectives and policies.* Develops long-range research objectives and programs concerned with such matters as guided missiles, military applications of atomic energy, and adaptation of equipment and materials to persons in military situations. Ensures research programs are in support of existing or proposed tactical and strategic requirements. Conducts surveys of research projects to determine areas where further research is required. Reviews legislation to determine impact upon objectives and programs. Formulates policies and procedures governing conduct and administration of research activities. Initiates plans, policies, and programs for management of scientific and specialized personnel to ensure optimum use of skills and abilities. Recommends establishment of new, or modification of existing, research projects and facilities.

b. *Establishes and monitors research programs and projects.* Directs establishment of research programs and projects, and allocates responsibility for accomplishment. Ensures adequate support of basic and applied research needs outside the province of government agencies by providing for contracts with private institutions to conduct

basic research. Provides for testing and evaluation of newly developed items. Monitors research programs, approves major work plans and fiscal allocations, and ensures program scopes are consistent with available funds. Prepares and defends research budget estimates. Participates in formulating and approving military characteristics of materiel. Submits requests for research to federal agencies and engages in such specialized activities. Supervises preparation of activity, progress, and fiscal summary reports.

c. *Coordinates research activities.* Coordinates research and development organizations to establish procedures and promote dissemination and use of pertinent foreign and domestic scientific and technical data. Promotes interchange of scientific information between Air Force research organizations, governmental and industrial agencies, universities, Air Force contractors, and representatives of foreign countries to avoid unnecessary duplication and ensure mutual assistance in solving allied problems. Serves as representative on scientific and technical boards and committees.

#### 3. SPECIALTY QUALIFICATIONS

a. *Knowledge.* Knowledge of Air Force research and development policies, procedures, and management practices is mandatory.

b. *Education.* Master's degree in science or engineering, or bachelor's degree in science or engineering with master's degree in R&D management or business administration is desirable.

c. *Experience.* Full qualification in one or more of the operating level scientific specialties and 48 months' experience in the utilization field are mandatory. Twenty-four months' of Air Force instructing in either mathematics,

physics, chemistry, biology, operations research, behavioral science or qualification in computer technology can be applied toward the experience requirement. It is mandatory that experience include 12 months year performing functions as formulating plans and policies, developing procedures applicable to broad scientific research management, budget preparation and planning, and scheduling within R&D organizations.

d. *Training.* Completion of laboratory management research and development course is desirable.

#### 4. SPECIALTY DATA

a. *Grade Spread.* Major through colonel.

b. *Related DOD Occupational Group(s).*

APPENDIX B

PROPOSED SPECIALTY DESCRIPTION FOR AFSC 267X  
(To be effective 30 Apr 85)

**OFFICER AIR FORCE SPECIALTY****• BEHAVIORAL SCIENTIST****1. SPECIALTY SUMMARY**

Conducts and monitors basic and applied military or contract research to identify, quantify, predict, and manage human behavior and performance. Determines system, occupational, or job requirements. Develops tests or measures of human skills, aptitudes, motivations, attitudes, and performance. Applies research results in design, development, acquisition, or modification of weapons systems or human factors requirements. Applies advanced technology in human resources selection, training, promotion, or other Air Force management systems. Consults, instructs, or manages behavioral science activities.

**2. DUTIES AND RESPONSIBILITIES**

a. *Conducts or monitors basic or applied research.* Develops research proposals. Plans and executes research on human behavior including sensory, motor, intellectual, and emotional processes and attitudes or man-machine relationships. Develops and tests hypotheses, conducts experiments and surveys, and analyzes and reports results. Monitors solicited and unsolicited research conducted on a contractual basis.

b. *Determines system, occupational, or job requirements.* Interviews systems, contractor, or occupational subject matter specialists to identify and measure required behaviors and job requirements. Develops and validates instruments and conducts field administrations to collect and quantify human performance requirements data and man-machine requirements. Uses resulting data in design, development, or evaluation of Air Force training and human resources management programs.

c. *Develops tests and measurement devices.* Constructs measures of human aptitudes, skills, specialty knowledges, motivations, attitudes, and performance to quantify human willingness or capability to meet Air Force requirements. Validates such instruments and systems for use of resulting data.

d. *Applies human factors technology and research results in systems design or modification.* Conducts development projects to apply human factors information

in the design and operation of Air Force weapons systems and supporting human resources management systems. Conducts and participates in human factors tests and evaluations (HFI&E), systems development tests and evaluations (DI&E), operational tests and evaluations (OI&E), and follow-on tests and evaluations (FOT&E). Plans and conducts technology transfer projects.

e. *Consults on or instructs in human behavior.* Serves as liaison between the Air Force and the scientific community, including civilian, industrial, allied, and other government agencies. Reviews professional literature and participates in professional meetings to keep abreast of behavioral sciences developments. Serves as technical consultant or representative to scientific meetings, technical boards, and committees. Develops behavioral science curricula and teaches behavioral principles for commissioning, professional military, and occupational education and training programs.

f. *Manages behavioral sciences research and applications programs.* Plans, organizes, directs, and manages staff activities, programs, and projects to research, develop, and apply advanced technology for meeting Air Force requirements. Directs technical personnel. Performs as staff officer and manager in positions requiring technical qualification in behavioral sciences.

**3. SPECIALTY QUALIFICATIONS**

a. *Knowledge.* Knowledge of Air Force research policies, procedures and management practices as they apply to behavioral science activities is mandatory. Knowledge of Air Force human factors research and acquisition policies, procedures, and management practices is mandatory for upgrade in the human factors specialist shredout (2675A).

b. *Education.*

(1) Mandatory requirements for entry into AFSC 2675: Undergraduate academic specialization in psychology, human engineering, or a related social science with 24

semester hours in the following courses: quantitative methods, measurement, experimental design, research methods, and human development.

(2) Mandatory requirements for entry into the human factors specialist shredout (2675A): Undergraduate academic specialization in psychology or engineering with completion of the following courses: statistics (through univariate analysis), experimental design (psychology or engineering), perception sensation or psychophysiology, computer science programming, and human factors

engineering or engineering psychology.

(3) Master's degree and doctorate in human factors psychology or engineering, industrial or experimental psychology, or a related scientific area are desirable.

c. *Experience.* A minimum of 24 months' experience is mandatory for upgrade.

(1) Up to 12 months' experience as a USAFA instructor in behavioral sciences may be applied toward this

minimum experience requirement for AFSC 2675.

(2) A master's degree in psychology or engineering can substitute for 12 of the 24 months for AFSC 2675A.

d. *Training.* Completion of the AFH short course on human factors engineering in systems acquisition is desirable for 2675A personnel being assigned to a system program office.

#### 4. SPECIALTY DATA

a. *Grade Spread.* Second lieutenant through lieutenant colonel.

b. *Related DOD Occupational Group.* 51

#### 5. \*SPECIALTY SHREDOUTS

*Suffix*

A .....

*Portion of AFS to Which Related*  
Human Factors

APPENDIX C  
JOB GROUPS IDENTIFIED IN THE 1981 SURVEY

## BEHAVIORAL SCIENTISTS JOBS

### Phase 1 - 1981

overview. For the Behavioral Scientist specialty, individual job descriptions were compared to identify the career field structure of jobs. The analysis identified 25 different types of jobs which grouped into 7 major clusters; these included: Research Program Scientists (35 percent); Functional Unit Supervisors (10 percent); Academic Instructors-Counselors (10 percent); Junior Task Scientists (6 percent); AFIT Students (4 percent); Occupational Analysts (15 percent); Human Factors Engineering Researchers (7 percent); and Test Development Psychologists (12 percent). The major clusters of jobs include about 98 percent of the cases in the sample; the remaining individuals were filling one-deep, unique positions. The major clusters of jobs are displayed graphically in Figure C-1 to illustrate the relative size of the various functions in the Behavioral Scientist specialty.

There are no tasks which are performed by all members of the sample; most tasks are performed by members of some of the groups listed above but not by members of other groups. There are a few tasks which are performed by some proportion of all groups; these are the things which come the closest to being "common tasks"; see Table C-1 for examples of such common tasks. Several things are immediately obvious from this list of common tasks: none of these tasks is what could be considered a technical task of the Behavioral Scientist specialty; the tasks are behaviors which are performed by people in most Air Force specialties.

The lack of common core of technical task implies this is a very diverse career field. Behavioral Scientists have little technical work which they perform in common, but rather tend to subspecialize in their own technical area. Thus, to really understand the career field, we must take a look at the various types of jobs which Air Force Behavioral Scientists are performing.

### Job Group Descriptions

This section provides details about each of the job groups identified above including, where appropriate, some indication of subgroups where specialization occurs. The descriptions will include some information about the types of individuals in each group, the tasks they perform in common, and the tasks unique to each subgroup. Job attitudes and other background information will be discussed later when the various groups are compared with one another.

I. RESEARCH PROGRAM SCIENTISTS (GPO013). Survey respondents in the Research Program Scientists cluster represent 35 percent (N=57) of all the individuals in the study and are assigned to virtually all of the major commands where behavioral science activities are performed. They range in

grade from second lieutenant to colonel, and include a few civilians GS-11 through GM-13. They perform the general tasks noted previously; other tasks they perform in common (that bring them together as a group) include:

- Analyze results of research
- Analyze research data
- Prepare reports documenting findings or conclusions
- Plan research experiments or research surveys
- Identify research requirements
- Arrange for processing of research data
- Direct statistical analysis of data
- Monitor progress of projects
- Maintain contact with personnel of other units
- Perform research literature reviews
- Collect data for research
- Advise nonscientific users on techniques or applications to meet their needs
- Present research findings at meetings

Within this broad cluster of jobs are more specific jobs where incumbents tend to specialize in research activities involving a different organizational mission or program. While they perform some tasks in common, each group performs a slightly different set of specific tasks. These groups include: Personnel Research Program Managers, Technology Applications Researchers, Plans Staff Officers, Senior Academic Staff Officers, Contract Monitors, Test Development Researchers, AFMPC Attitude Researchers, and Air War College Evaluators. Each of these jobs will be discussed briefly.

A. Personnel Research Program Managers (GPO065). These 14 individuals are assigned to AFMPC, AFHRL, LMDC, AFAMRL, OAR, LMDC, USAFRS, and USAFSAM as branch chiefs, lab managers, program director, or chief of a research or analysis division. Grades range from first lieutenant through lieutenant colonel or GS-11 to GM-13. In addition to the tasks listed above as commonly performed by all members of the cluster, members of the Personnel Research Program Managers also perform the following tasks:

- Identify specific research problems to be addressed
- Develop or test hypotheses
- Provide research results or findings to users or potential users
- Provide guidance on resolving technical project problems
- Conduct research plans meetings
- Submit proposals for review or evaluation
- Listen to subordinates summarize technical problems

- Interact with lateral managers to resolve technical problems
- Set up experimental designs
- .
- .
- .

These tasks tend to characterize the group as managers of research although it is clear they are also doing some research themselves. As section, branch, or program chiefs, many of them are supervisors of other researchers.

B. Technology Applications Officers (GPO072). These five individuals are first lieutenants through lieutenant colonels assigned to the ATC Technical Training Center Technology Applications offices or to the AFHRL Applications and Liaison office. While they perform many of the common research tasks outlined earlier, their jobs tend to focus on the application of research results. Typical tasks include:

- Act as liaison between technical training, research, or plans activities
- Coordinate applications projects with technical training activities
- Translate technical reports or research products into recommendations for applications
- Sell use of behavioral science research to potential users
- Coordinate applications projects with using organizations
- Track research utilization to final disposition
- Review unique solutions to training problems
- .
- .
- .

These tasks clearly distinguish this group as focusing on the applications of research, primarily in the area of technical training technologies.

C. Plans Staff Officers (GPO042). These 12 individuals include first lieutenants through lieutenant colonels and one GM-13 who are assigned to Plans sections with AFMPC, AFSC, ATC, AFHRL, and USAFOMC. In addition to the common administrative tasks outlined earlier for the career field as a whole, members of this group also perform staff duties including such tasks as:

- Serve as focal point between organization or unit and higher level headquarters
- Review status of programs or issues



- Provide staff assistance on policy issues
- Coordinate with lateral agencies on subjects such as policies, procedures, publications, budget, or facilities
- Act as liaison between technical training, research, or plans functions
- Coordinate behavioral science research programs, projects, or activities with related or interested agencies
- Advise commander or management on plans or policy
- Prepare memorandums of agreement

These tasks are more typical of plans functions than of researchers, and the focus of the job is on the management of research rather than the day-to-day conduct of specific research programs.

D. Senior Academic Staff Officers (GPO042). These 12 officers (first lieutenant through colonel) are faculty members assigned with the USAF Academy or AFIT. They are "senior staff" in terms of their positions (Head, Department of Organizational Sciences; Head, DFBL, Director of Research, etc.) although the group does include instructors who also do staff work. These individuals are primarily AFS 2675 officers, but some hold the 0940 code or AFSC 7016 (Executive Officer); 5 of the 12 hold the T-prefix, indicating qualification as an instructor. Teaching tasks performed by all members of the group include:

- Interact with students
- Conduct classroom instruction
- Prepare lesson plans or design course curricula
- Perform one-on-one counseling for academic problems
- Prepare tests
- Provide input to higher level personnel regarding academic or military quality of students

In addition to teaching, members of this group perform staff functions which are typified by the following types of tasks:

- Develop budget requirements or budget estimates
- Submit proposals for review or evaluation
- Identify research requirements
- Advise commander or management on problems or potential problems
- Schedule TDY trips
- Determine budget priorities

A third major component of this job is research; most of these individuals also perform the following types of tasks:

- Design special instruments or techniques for research
- Analyze research data
- Direct statistical analysis of data
- Set up experimental designs
- Write articles for professional journals
- Prepare reports documenting findings or conclusions
- .
- .
- .

In some tasks, the various components of the job interact (such as review student research proposals; demonstrate use of equipment; etc.). The combination of tasks performed by members of this job clearly indicates that many academic positions require more than just classroom instructing. The Senior Academic Staff Officers have a job of very wide scope which involves them as Air Force officers, Behavioral Scientists, and Instructors.

E. Contract Monitors (GPO036). The six members of this group are a mix of DAF civilians (GS-11 or 12) and officers (second lieutenant through major) assigned to AFHRL, AFWAL, or the Flight Dynamics Laboratory, all in Air Force Systems Command. In addition to performing research tasks common to the cluster, members of this group deal with contract research more than most other groups. Typical tasks include:

- Maintain documents or paperwork relating to contracts
- Prepare statements of work (SOW)
- Monitor contracts in terms of technical or financial aspects
- Review contract deliverables for acceptability
- Coordinate or publish final contractor reports
- Interact with procurement or administration personnel
- Prepare purchase request (PR) forms
- Participate in contractor briefings or reviews

F. Test Development Researchers (GPO025). The two members of this group are assigned to the USAFOMC test development program in support the Weighted Airman Promotion System (WAPS) and conduct research on the psychometric properties of WAPS tests and the Promotion Fitness Examination. One of these officers is assigned as the Chief of Test Research, while the other is a Test Psychologist who is actively involved in the ongoing research program. Typical tasks include:

- Conduct research on psychometric characteristics of SKTs
- Develop or test hypotheses
- Collect data for research
- Direct statistical analysis of data
- Set up experimental designs
- Arrange for processing of research data
- Analyze research data

Other tasks performed by members of this group include SKT development tasks, which will be discussed later for the WAPS Test Developer's job type.

G. AFMPC Attitude Researchers (GPO068). The three members of this group include one DAF civilian (GS-7) and two captains assigned to MPCYP. They are responsible for developing, administering, and analyzing several Air Force-wide surveys, including the Quality of Life survey. Tasks performed include:

- Plan or develop attitudinal surveys
- Evaluate survey instruments
- Prepare input for Congressional testimony or special hearings
- Serve as consultant on psychometric acceptability of evaluation instruments
- Analyze research data
- Prepare reports documenting findings or conclusions
- .
- .
- .

H. Air War College Evaluators (GPO032). This small group of two officers includes the Director of Evaluations (O-6) and Assistant Director of Evaluations (O-5) at the Air War College (Air University). They hold duty AFSCs of 0076 and 0940, respectively. Tasks they perform are a mixture of research, staff functions, and instructional evaluations.

- Develop or plan improvements in program procedures
- Write regulations
- Supervise civilian personnel
- Plan or develop attitudinal surveys
- Conduct classroom instruction
- Evaluate survey instruments
- Direct statistical analysis of data
- Advise commander or management on plans and policy
- Advise nonscientific users on techniques or applications to meet their needs
- Review status of programs or issues
- .
- .
- .

These officers are supervisors of one to two individuals and some tasks they perform (i.e., Supervise civilian personnel; Counsel subordinates...) are very similar to unit supervisors, who are discussed in the following paragraphs.

II. FUNCTIONAL UNIT SUPERVISORS (GPO018). Ten percent of the total sample were identified as responsible for supervising Behavioral Scientists. These 18 supervisors range from first lieutenant to colonel, and also include one GS-12 civilian section chief. They are assigned to a variety of units (USAFOMC, 3507th Airman Classification Squadron, ASD, CCAF, HQ ATC, etc.) and directly supervise from 2 to 14 individuals. Most hold AFSC 2675 but a few are AFSC 0026 or 7516 officers.

Members of this group spent 50 percent of their work time on an average of 35 tasks, which are a mixture of administrative, supervisory, and general functions. Tasks which typify the group include:

- Prepare or proofread correspondence, such as memos, letters, or messages
- Evaluate personnel performance
- Coordinate correspondence
- Direct administrative activities
- Supervise military personnel
- Supervise civilian personnel
- Resolve problems or conflicts (program or personal)
- Review status of programs or issues
- Interpret policies for subordinates

The group is further distinguished by the tasks they do not perform; few of them actually conduct any type of research. Only 5 to 15 percent of the group are involved with research planning or objectives, collecting or analyzing data, or preparing reports on research findings. Only 38 percent are involved in professional meetings or conferences and only about 5 percent provide guidance on resolving technical project problems. Thus, this group appears to focus on their supervisory responsibilities and have little involvement in the technical work of the Behavioral Scientist specialty.

III. INSTRUCTORS-COUNSELORS (GPO014). The 16 members of this job type represent about 10 percent of the total sample; they work as members of the faculty at various military schools (primarily the USAF Academy, but also including AFROTC units, the Leadership and Management Development Center, and the Equal Opportunity Management Institute). These officers range in grade from captain to lieutenant colonel, with the majority being captains. Most hold the 2675 AFSC but several report a duty AFSC of 0940, Instructor. The main thrust of their job is classroom instruction; typical tasks include:

- Interact with students
- Conduct classroom instruction
- Prepare lesson plans or design course curricula
- Prepare tests
- Lead discussions or seminar groups
- Score tests
- Perform additional military duties, such as safety, disaster preparedness, or unit historian
- Perform one-on-one counseling for personal problems
- Develop reading lists or course syllabus
- Perform one-on-one counseling for academic problems
- Arrange for graphics or visual aids

Within this Instructor-Counselor group, there were several job variations: USAFA Instructors-Counselors; AFROTC Instructors-Counselors; USAFA Instructors; and Other Instructors. As these names imply, some incumbents perform primarily as classroom instructors. A separate group at the USAFA both instructs and serves as counselors. The AFROTC Instructors included in this group are more similar to the USAFA Instructors-Counselors than to the pure instructor group. The Other Instructors subgroup includes several unique, one-of-a-kind faculty position with the DOD Equal Opportunity Management Institute (EOMI), AFIT, or other academic units. They group with the USAFA and AFROTC Instructors because of their shared instructing and counseling tasks.

IV. TASK SCIENTISTS (GPO050). The six individuals in this mixed group are assigned to various organizations (AFHRL, AFAMRL, AFMPC, etc.) involved in ongoing research programs. They are typically junior officers (lieutenants or captains); most hold the entry-level AFSC (2671). They have a relatively narrow job; 50 percent of their job time is focused on just 15 tasks, such as:

- Analyze research data
- Design special instruments or techniques for research
- Develop or test hypotheses
- Collect data for research
- Prepare reports documenting findings or conclusions
- Plan research experiments or research surveys
- Read current periodicals and journals relating to field of endeavor
- Arrange for processing of research data
- Direct statistical analysis of data
- Identify research requirements
- Identify specific research problems to be addressed
- Set up experimental designs

These jobs are narrowly focused on specific research and analysis activities and are lacking some of the "normal" involvement with extra military duties and associated functions. Two-thirds of this Task Scientist group attend off-duty classes to obtain a master's degree, which is a normal requirement for upgrading to the fully qualified level of the AFSC 2675 specialty.

V. AFIT STUDENTS (GPO045). The four members of this group are full-time students in graduate psychology programs under the Air Force Institute of Technology civilian institutions program. Most hold the entry-level AFSC (2671). These full-time students were included in the study to assess their "jobs" in relation to the research being performed by "line" Behavioral Scientists. They proved to perform many of the same tasks as the Task Scientists group discussed previously:

- Read current periodicals and journals relating to field of endeavor
- Prepare report(s) documenting findings or conclusions
- Perform research literature reviews
- Analyze research data
- Plan research experiments or research surveys
- Design special instruments or techniques for research
- Develop or test hypotheses
- Collect data for research

In addition, they perform some tasks which are uniquely "student" work:

- Write thesis or dissertations
- Prepare research proposals for class course work
- Attend college courses
- Participate in seminar or discussion groups
- .
- .
- .

Members of this AFIT Student job group are distinguished by the lack of supervisory, administrative, and staff functions. Their "jobs" focus narrowly on specific classroom, research, and analysis activities and they lack any extra military duties and related functions. They are very similar in this respect to the Task Scientists group described earlier; this similarity is further enhanced by the off-duty education being pursued by most of the Task Scientists group.

VI. OCCUPATIONAL ANALYSTS (GPO022). The 25 members of this group represent 15 percent of the total sample who specialize in the development of USAF job inventories and the analysis of occupational data collected

through occupational surveys. The majority of the group are assigned to the USAF Occupational Measurement Center (ATC), Randolph AFB TX, although two Exchange Officers in Melbourne, Australia, and Ottawa, Canada, are also found in the group. The majority are officers (grades second lieutenant through captain) but eight are DAF civilian employees (grade GS-222-11 through GM-222-13). One is a CMSgt assigned to the USAFOMC who is performing as an Inventory Developer in a company-grade equivalent job. Most hold the Behavioral Scientist AFSC (eight at the entry level), but one is an Education and Training officer (AFSC 7524) and the CMSgt holds CEM Code 73200. (Note: 7524 officers were used from 1977 through 1981 in the occupational analysis program since AFSC 2675 officers were not available when the program was expanded to include Officer job analysis and Management Applications functions. The six positions involved were transitioned back to the 2675 field as incumbents rotated and qualified Behavioral Scientists became available.)

The two Exchange Officer positions in Canada and Australia are assigned to the occupational analysis programs of those nations; both use the Comprehensive Occupational Data Analysis Programs (CODAP) system developed by the USAF (as do the other US services). Thus, experience in USAF occupational analysis is a prerequisite for selection for these unique overseas assignments.

The job performed by members of this occupational analysis group is a relatively specialized one which is narrowly focused on a single mission; 50 percent of their total work time involves an average of just 22 tasks. Task typically performed include:

- Gather or review specialty documents, such as AFR 39-1 specialty descriptions, STSs, or CDCs
- Gather or review training course materials, such as POIs, course charts, course standards, etc.
- Gather or review previous job inventories or Occupational Survey Reports (OSR)
- Gather or review technical orders, manuals, or regulations
- Prepare preliminary task lists
- Develop background information items for job inventories
- Coordinate with personnel at bases to be visited to arrange visit
- Interview subject-matter specialists to develop inventory task lists
- Edit draft or bond copies of job inventories
- Prepare CODAP computer requests
- Analyze cluster merger diagrams to determine job structure of Air Force specialties
- Analyze occupational data using CODAP to determine background uniqueness among Air Force specialty groups
- Analyze task difficulty or training emphasis data

Write narrative Occupational Survey Reports (OSR)  
Develop or prepare formal briefings  
Present briefings

Within this Occupational Analyst group, there were three job variations which parallel the organizational structure of the USAFOMC occupational analysis program. One subgroup specializes in Inventory Development, one spends most of their time analyzing enlisted occupational survey data and writing OSRs, and a third subgroup (in the Officer and Management Applications Section) who perform both inventory development and analysis functions. Interestingly, the USAF captain on exchange duty with the Royal Australian Air Force (in Melbourne) and the USAF-Canadian Exchange Officer (National Defence HQ, Ottawa) both appeared in the occupational analyst group even though the captain in Australia had never been assigned to the USAF occupational analysis program and the Canadian exchange officer was newly assigned. Thus, the jobs are very similar in content even though located half way around the world.

VII. HUMAN FACTORS ENGINEERING RESEARCHERS (GPO009). The nine individuals identified in this group represent 7 percent of the total sample who are very specialized in the area of Human Factors. They range in grade from second lieutenant through major, are all assigned to units within Air Force Systems Command (Aeronautical Systems Division/ENECH, Flight Test Center at Edwards, Electronic Systems Division at Hanscomb, and the Ballistic Missile Office in Los Angeles), and almost all hold the Behavioral Scientist AFSC (one is 2611, Staff Scientist). Six of the nine hold the entry-level qualification (2671) reflecting a very junior experience level. Some give their job title as "Human Factors Engineer" where others refer to themselves as "Human Factors Psychologists."

The Human Factors Engineering Researchers formed a very discrete job group with very little overlap with other groups (although their supervisors and staff personnel were identified in the Research Program Scientist cluster). Their core tasks reflect a concentration on developmental research efforts (6.3 and 6.4 research) not shared by any other group. Tasks typical of this group include:

- Advise on Human Factors design considerations
- Apply HFE in early systems planning, studies, or analysis for engineering development (6.4)
- Participate in development conferences, such as critical design reviews or mockup reviews
- Analyze designs for manpower, training, or personnel implications in engineering development (6.4)
- Consult with System Program Office (SPO) personnel on Human Factors problems
- Conduct HFE consultation or studies for SPOs
- Apply HFE to advanced development (6.3) prototype design



Coordinate HFE activities with other USAF agencies  
Evaluate or write comments on Human Factors tests  
Evaluate proposals, forms, or suggested approaches  
submitted by other agencies or individuals  
Prepare trip reports  
.  
.  
.

VIII. WEIGHTED AIRMAN PROMOTION SYSTEM (WAPS) TEST DEVELOPMENT PSYCHOLOGISTS (GPO016). The 20 individuals in the WAPS Test Development Psychologist group represent 12 percent of the sample. All are assigned to the USAF Occupational Measurement Center's test development program; most are AFSC 267X officers (second and first lieutenants), with the remainder being DAF civilian employees (GS-180-9 through 12). Half of the officer group hold the entry-level AFSC (2671); the remainder are at the fully-qualified level (AFSC 2675). Three job variations exist within the group; Test Psychologists, Review Psychologists, and Senior Review Psychologists, representing three levels of production and quality control of the enlisted promotion tests. (WAPS Test Development Researchers and Test Development Supervisors were identified in the large initial cluster of Research Program Scientists.)

WAPS Test Development Psychologists appear to have very distinct jobs, with little overlap with the remainder of the career field. Like the Occupational Analysts and Human Factors Engineering Researchers, the WAPS Test Development Psychologists focus on a relatively small number of very specialized tasks. Fifty percent of the group's job time involves just 15 tasks; typical WAPS Test Developer's tasks include:

Participate in predevelopment or postdevelopment  
conferences  
Brief incoming or outgoing subject-matter specialists  
(SMS)  
Construct test outlines for Specialty Knowledge Test  
(SKT) development  
Direct USAF specialty knowledge test (SKT) activities  
Process item record cards  
Paginate SKTs  
Conduct or participate in master reviews of SKTs  
Coordinate editorial changes with Senior Review  
Psychologists  
Prepare request for supplemental references for SKT teams  
Prepare test reference documentation and study reference  
lists  
Proofread camera ready copies of SKTs  
Prepare test materials for turn-in at end of projects  
Prepare and coordinate CDC/SKT/STS compatibility  
critiques  
Review test construction documentation

## COMPARISONS OF JOBS AND ATTITUDES

In addition to examining the various Behavioral Scientist jobs on the basis of tasks performed, we need to also examine the groups in terms of the background characteristics of the people and requirements of the positions. Some of these characteristics are displayed in Table C-2, which highlights the composition of each group and their major command of assignment. Note that the largest group, Research Program Scientists, is distributed across grades and across commands; a more detailed look at this group is given in Table C-3, which summarizes data for the job types within the Research Program Scientist cluster.

In reviewing these tables, it is clear that the entry-level (captain) positions in the behavioral science area are primarily the WAPS Test Developers, Occupational Analysts, Human Factors Engineering, Task Scientists, AFIT Students, or Personnel Research Programs. These types of jobs are centered in Air Training Command and Air Force Systems Command, sometimes in a single unit (as with WAPS Test Development in the USAF Occupational Measurement of ATC). Slightly more senior jobs (experienced) are the Academic Instructors and Counselors, Plans Officers, and Staff positions; these jobs are distributed across commands although some, such as Instructors and Counselors are primarily in USAFA and ATC (which in 1981 included Air University and AFIT). The most senior positions involve Personnel Research Program Management, Senior Academic Staff, and Evaluations positions, as well as Functional Unit Supervisors; these positions are widely distributed across major commands and organizations. Those supervising are grouped together primarily in the Functional Unit Supervisors job type: 94 percent of this group indicate they supervise one or more individuals. Their tasks were described earlier and clearly focus on the supervisory responsibilities.

The positions requiring a Ph.D. authorization are identified by major job group in the last line of Tables C-2 and C-3. Note that the jobs currently designated as doctoral-level positions are located in the major cluster (Research Program Scientist cluster) and the Functional Supervisors. Table C-3 breaks out the Research Program Scientists into job types and the last line of the table reflects that the doctoral positions include about one-third of the Personnel Research Program Managers, two-thirds of the Senior Academic Staff Officers, one-third of the Contract Monitors, and all of the Air War College Evaluators (N=2). Thus, the doctoral positions for the behavioral science area are primarily for supervisors, who need to provide technical guidance; senior academic personnel, who require the advanced degrees for academic accreditation and technical guidance to junior faculty; for Contract Monitors, for technical evaluation of research proposals and performance; and for AU Evaluators, for validation of PME curricula. Individuals in the basic "entry-level" jobs (Human Factors, Task Scientists, WAPS Test Developers, and Occupational Analysts) do not require doctoral level education in their present positions.

In terms of incumbents' attitudes towards their jobs, most individuals indicated they find their job interesting or very interesting (see Table C-4). The AFIT Students are all highly interested and motivated. Only two job groups (Human Factors Engineering Psychologists and WAPS Test Development) had any significant proportion indicating their job was "dull" (22 and 35 percent, respectively). These are entry-level positions manned primarily by second and first lieutenants who perform many routine tasks.

A somewhat different pattern is seen when job incumbents' attitudes about how well their job utilizes their talents (see Table C-5). The grouping of response categories is somewhat different because of the different wording (the middle categories are related in this item; 3. Fairly Well, 4. Well, and 5. Very Well, and are collapsed into a middle range response). Only the Research Program Scientists and Academic Instructors felt their talents were used "Excellently" or "Perfectly"; most other groups responded in the middle range. The most negative responding groups were the WAPS Test Developers, with 50 percent feeling their talents were not used and the Task Scientists (33 percent). A review of the tasks performed by members of the WAPS Test Developers group (such as "Paginate SKTs", "Proofread camera-ready copies of SKTs", "Prepare test reference documentation and study reference lists", etc.) suggests the test development job has little involvement in research and development. Test development requires a knowledge of psychometrics, which is a rather specialized area of psychology, but obviously many of the job incumbents (50 percent) feel that the test development job does not use their particular background or talents. In the case of Task Scientists, two out of six feel their job does not use their talents. This may be a function of the relative narrow scope of their job which focuses on data collection and analysis or their preoccupation with upgrading through off-duty education programs.

A similar pattern is seen with the question of job incumbents' satisfaction with their job accomplishment; 45 percent of the WAPS Test Development Psychologists are "dissatisfied" where the vast majority of members of all other job groups are very satisfied (see Table C-6). This finding reinforces the picture emerging from earlier questions that morale may be a problem with the very junior officers performing this somewhat routine (although very important) job.

One additional attitudinal question was asked of all job incumbents, "How satisfied are you with the organizational climate of your unit?" This was an experimental question (one which is not routinely asked in all surveys) aimed at assessing organizational attitudes (which the research literature indicates is important to productivity). The results were rather startling. While most job attitudes were very good in earlier questions, sizeable proportions of many of the job groups indicated dissatisfaction with the organizational climate of their unit (see Table C-7). Over half of the Functional Unit Supervisors and WAPS Test Development Psychologists indicated dissatisfaction with the organizational climate of their unit; for most other groups the response was typically 20 to 40 percent, with the exception of Research Task Scientists and AFIT Students. These results suggest that while individuals have been very happy with their work, they are not happy with their organization. Yet, re-

additional organizational climate questions were included in the study to determine the source of the dissatisfaction; thus, we do not know if it is their supervisor, higher management, command, or working conditions which they are unhappy with. No specific write-in comments addressed this issue (as is normally the case in enlisted studies where large percentages are dissatisfied).

Finally, Table C-8 summarizes the career plans of job incumbents in the various job groups identified in this analysis. These data present a very ambiguous picture--groups vary from only 12 to 50 percent saying they plan to stay in the Behavioral Scientist career field. Fifty percent of the WAPS Test Development Psychologists will cross train or are undecided about their future; this is not particularly surprising given their current job attitudes and the fact that most are new to the Air Force (lieutenants). Many of the other job groups have a similar pattern with between 19 and 44 percent being undecided or planning to cross train out of the specialty. Yet, only very small percentages plan (at this time) to separate from the service before retirement (6 percent of the Instructors to 12 percent of the Occupational Analysts). These data suggest that many individuals just do not know what they want to do in the future and only a few have made a commitment to themselves to leave the service. This lack of consistent trend may also explain why there was a substantial "no response" or "other" response to this question for some job groups.

#### SUMMARY COMMENTS

The picture of Air Force Behavioral Scientists which emerge from this 1981 analysis of their jobs is one of a very diverse specialty, where only general administrative tasks (things any military member or civilian employee would do) are performed in common. The jobs range from fairly routinized development of WAPS tests, where a set procedure involving many essentially clerical tasks is required) to highly technical research positions (Human Factors Engineering Psychologists, Technical Contract Monitors, Senior Academic Staff Personnel who teach, do counseling, and also do psychological research). These various jobs tend to be very specialized and differ markedly in terms of both their objectives and required backgrounds.

There are some problem areas in terms of job content and job attitudes. The WAPS Test Development Psychologist job stands out as one where only a few very specialized psychometric tasks are performed along with some general tasks which are administrative tasks (proofreading, turn in files, document references, etc.). The associated negative job attitudes of members of this group represent a problem area requiring attention. Another problem area is the issue of organizational climate, where many of the Behavioral Scientists in almost all job groups express dissatisfaction. The sources of these negative attitudes toward their organizations need to be identified so they can be resolved.

FIGURE C-1  
1981 BEHAVIORAL SCIENTIST JOBS

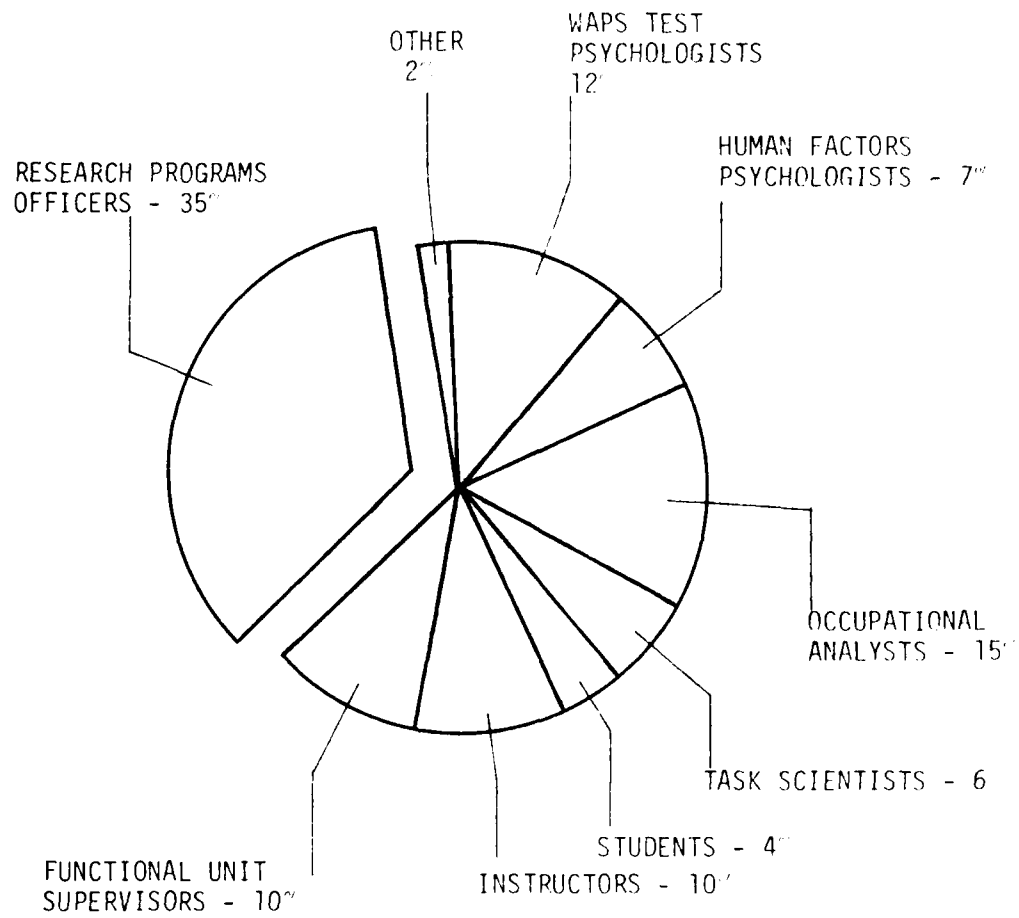


TABLE C-1

PHASE 1 - 1981: TASKS PERFORMED BY AT LEAST  
60 PERCENT OF ALL BEHAVIORAL SCIENTISTS

TASKS	PERCENT PERFORMING
PREPARE OR PROOFREAD CORRESPONDENCE, SUCH AS MEMOS, LETTERS, OR MESSAGES	78
READ AIR FORCE (OR SEMI-OFFICIAL) RECURRING PUBLI- CATIONS (AU REVIEW, ETC.)	77
ANSWER TELEPHONE INQUIRIES	77
ATTEND STAFF MEETINGS	76
COORDINATE CORRESPONDENCE	75
READ CURRENT PERIODICALS AND JOURNALS RELATING TO FIELD...	72
PRESENT BRIEFINGS	72
DEVELOP OR PREPARE BRIEFINGS	64
RESOLVE PROBLEMS OR CONFLICTS (PROGRAM OR PERSONAL)	63

TABLE C-2

## BACKGROUND CHARACTERISTICS

	CLUSTER		FUNCTIONAL UNIT SUPERVISORS	ACADEMIC INSTRUCTORS/ COUNSELORS	RESEARCH TASK SCIENTISTS	HUMAN FACTORS ENGINEERING PSYCHOLOGISTS	OCCUPATIONAL ANALYSTS	WAPS TEST DEVELOPERS
	RESEARCH PROGRAM SCIENTISTS							
TOTAL NUMBER IN GROUP	57		17	16	6	9	25	20
NUMBER MILITARY IN GROUP	51		17	16	6	8	18	12
GRADE								
LT	7		2	-	5	5	7	12
CAPT	18		6	9	4	2	10	-
MAJOR	15		6	4	1	1	1	-
LTC	9		2	3		-	-	-
COL	2		1	-		-	-	-
MAJCOM								
AFSC	32%		11%	-	-	100%	-	-
ATC (INCLUDES AU)	26%		83%	25%	40%	-	100%	100%
USAF	19%		-	69%	50%	-	-	-
OTHER	23%		6%	6%	10%	-	-	-
PERCENT SUPERVISING POSITION DESIGNATED AS Ph.D.	40%		94%	6%	20%	-	8%	5%
	35%		6	-	-	-	-	-

TABLE C-3  
BACKGROUND INFORMATION - RESEARCH PROGRAM SCIENTISTS

PERSONNEL RESEARCH PROG MGRS	TECHNICAL APPLICATIONS RESEARCHERS	PLANS STAFF OFFICERS	TECHNICAL APPLICATIONS STAFF OFCERS	SENIOR ACADEMIC OFFICERS	CONTRACT MONITORS	TEST DEVELOPMENT RESEARCHERS	MPC ATTITUDE SRVY RESPONDENTS	AWC EVALUATION RESEARCHERS
NUMBER OF MILITARY	3	5	3	11	4	2	2	2
GRADE								
LT	1	1	-	1	1	2	-	-
CAPT	7	-	1	3	1	-	2	-
MAJOR	1	3	2	5	2	-	-	-
LTC	2	1	-	1	-	-	-	1
COL	-	-	-	1	-	-	-	1
NAJCOM								
AFSC	-	67%	-	-	100%	-	-	-
ATC (INCLUDES AU)	100%	-	100%	17%	-	100%	-	100%
USAF	-	-	-	75%	-	-	-	-
OTHER	-	17%	-	-	-	-	100%	-
PERCENT SUPERVISING POSITION DESIGNATED AS	-	17%	33%	42%	17%	50%	-	100%
Ph.D.	-	-	-	67%	33%	-	-	100%



TABLE C-4  
JOB INTEREST OF USAF BEHAVIORAL SCIENTISTS  
(PERCENT RESPONDING)

	"MY JOB IS..."		
	(1-3) DULL	(4) SO-SO	(5-7) INTERESTING
RESEARCH PROGRAM (N=57)	7	2	91
FUNCTIONAL UNIT SUPERVISORS (N=17)	0	6	94
ACADEMIC INSTRUCTORS & COUNSELORS (N=16)	6	6	88
RESEARCH TASK SCIENTISTS (N=6)	0	17	83
STUDENTS (N=4)	0	0	100
HUMAN FACTORS ENGINEERING PSYCHOLOGISTS (N=9)	22	0	78
OCCUPATIONAL ANALYSTS (N=25)	4	0	96
WAPS TEST DEVELOPERS (N=20)	35	15	50

TABLE C-5  
PERCEIVED USE OF TALENTS  
(PERCENT RESPONDING)

	"MY TALENTS ARE USED..."		
	(1-2) NOT AT ALL OR VERY LITTLE	(3-5) FAIRLY - VERY WELL	(6-7) EXCELLENT OR PERFECT
RESEARCH PROGRAM SCIENTISTS	7	46	47
FUNCTIONAL UNIT SUPERVISORS	6	88	6
ACADEMIC INSTRUCTORS & COUNSELORS	6	44	50
RESEARCH TASK SCIENTISTS	33	51	17
STUDENTS	0	25	75
HUMAN FACTORS ENGINEERING PSYCHOLOGISTS	11	78	11
OCCUPATIONAL ANALYSTS	8	76	16
WAPS TEST DEVELOPERS	50	50	0

TABLE C-6

SENSE OF ACCOMPLISHMENT FROM THE JOB  
(PERCENT RESPONDING)

	<u>"HOW SATISFIED WITH JOB ACCOMPLISHMENTS..."</u>		
	<u>(1-3) DISSATISFIED</u>	<u>(4) NEUTRAL</u>	<u>(5-7) SATISFIED</u>
RESEARCH PROGRAM SCIENTISTS	11	2	87
FUNCTIONAL UNIT SUPERVISORS			
ACADEMIC INSTRUCTORS & COUNSELORS	19	0	81
RESEARCH TASK SCIENTISTS	0	0	100
STUDENTS	0	0	100
HFE PSYCHOLOGISTS	11	0	89
OCCUPATIONAL ANALYSTS	4	8	88
WAPS TEST DEVELOPERS	45	5	50

TABLE C-7

SATISFACTION WITH THE ORGANIZATIONAL CLIMATE OF UNIT  
(PERCENT RESPONDING)

	<u>"HOW SATISFIED ARE YOU..."</u>		
	<u>(1-3) DISSATISFIED</u>	<u>(4) NEUTRAL</u>	<u>(5-7) SATISFIED</u>
RESEARCH PROGRAM SCIENTISTS	23	0	67
FUNCTIONAL UNIT SUPERVISORS	58	6	36
ACADEMIC INSTRUCTORS & COUNSELORS	38	0	62
RESEARCH TASK SCIENTISTS	17	17	66
STUDENTS	0	0	100
HFE PSYCHOLOGISTS	22	0	67
OCCUPATIONAL ANALYSTS	32	12	56
WAPS TEST DEVELOPERS	65	10	25

TABLE C-8

CAREER PLANS OF BEHAVIORAL SCIENTIST JOB GROUPS  
(PERCENT RESPONDING)

RESPONSE CATEGORY	RSCH PROG SCIENTISTS	FNCTL UNIT SUPERVISORS	INSTRUCT- COUNSELORS	TSK SCI & STUDENTS	HUMAN FACTORS	OCC ANALYST	WAPS TEST DEV PSYCH
CONTINUE IN 267X UNTIL RETIREMENT	44	42	38	50	33	12	25
CONTINUE IN 26XX	18	18	6	40	11	6	25
CROSS TRAIN	14	18	0	0	11	12	25
UNDECIDED	5	6	25	0	33	29	25
SEPARATE BEFORE RETIREMENT	0	0	6	10	0	12	0
RETURN TO RATED SUPPLEMENT	3	0	25	0	12	12	0
OTHER OR NO RESPONSE	15	24	0	0	0	18	0

APPENDIX D

MILITARY BEHAVIORAL SCIENTISTS OF OTHER  
SERVICES AND ALLIED NATIONS

## PSYCHOLOGISTS IN THE OTHER SERVICES

In the USAF, most psychologists are categorized as Behavioral Scientists (2675), with some being Scientific Managers (2616) or Systems Acquisition Officers (2724 or 2716). Clinical Psychologists, as health care providers, are classified in the Biomedical Specialties area (AFSC 9186) and generally have little interaction with "line" Behavioral Scientists.

In the other military services or DOD civilian employment, psychologists are given somewhat different occupational classifications (see Figure D1). This figure is taken from the DOD Occupational Conversion Manual (DOD 1313.1-M, OASD/MRA&L, December 1982) which is the official cross-reference for military occupational specialties. Note that military psychologists are classified as Occupational Group 5E in the DOD Occupational Conversion Manual. This category is also included in the AFR 36-1 specialty description for AFSC 2675 (see paragraph 4b of the description in Appendix A).

### U.S. ARMY

In the U.S. Army, psychologists are classified in both the 42 and 68 series. The 42D Psychological Evaluation Officer is part of an occupational series which also includes 42A Administrative & Personnel Systems Managers and 42B Postal & Courier Service officers. Other Army psychologists are part of the 68 series (A-U), which includes biomedical specialties ranging from Microbiologists (68A) to Social Workers (68R). The psychologists include: 68S Psychologist, 68T Health Services Research Psychologist, and 68U Behavioral Science Associate. Thus, in the U.S. Army, most psychologists are grouped generically within the biomedical area, except for Psychological Evaluation Officers who are an administrative occupation. Army psychologists are assigned primarily to medical and medical research organizations such as those shown in Figure D2. While the majority of these organizations are medical agencies, some involve other types of psychological research or teaching and counseling (i.e., West Point).

### U.S. NAVY

In the U.S. Navy, psychologists are categorized in either the 085X or the 225X series. The 2250 officers are titled Behavioral Scientist. Other specialties in the 22XX series include Psychological Operations Officer (2245) and Language Officer (2240). Interestingly, the Psychological Operations Officers of the U.S. Navy are not cross-referenced in the DOD Occupational Conversion Manual as Psychologists (5E) but rather as Intelligence Officers (3A). The 0851 Clinical Psychologists, 0852 Aerospace Experimental Psychologists, and 0854, Research Psychologists generally are categorized in the biomedical area (0849 is Aerospace Physiologist and 0860 is Entomologist). Major Navy organizations using USN psychologists are shown in Figure D3.

Navy psychologists work in a variety of areas ranging from psycho-physiological research to development and analysis of training programs. Psychologists at the U.S. Naval Academy, Annapolis, teach psychology courses at the Department of Leadership and Law and provide academic and

personal counseling to midshipmen. Psychologists with the Navy Personnel and Research and Development Center are involved in training research, human resources research, human factors and organizational systems research, and the development of new technologies. Thus, Navy psychologists span the full range from teaching to normal personnel research to advanced systems and aerospace technology development.

#### OFFICE OF PERSONNEL MANAGEMENT (OPM)

DOD civilian employees who are psychologists are classed as GS-180, Personnel Research Psychologists. Specializations within this civilian series include the full range of possible psychology areas. Other GS employees involved in psychology-related work include GS-222, Occupational Analysts (see earlier analysis of behavioral science jobs for a description of this function). In the DOD Occupational Conversion Manual, the GS-222 Occupational Analysts are grouped with Personnel Management and Personnel Administration jobs. For example, GS-221 involves Position Classifiers and GS-223 are Wage and Salary Administrators.

#### Summary

With the descriptive information provided above, it appears that there is no consistent policy within the DOD and the Office of Personnel Management on the classification and utilization of psychologists. In some services, military and civilian psychologists are categorized primarily under the biomedical areas, while other agencies, such as OPM, use one generic classification for most psychologists--GS-180 (with the exception of Occupational Analysts, GS-222 noted above). The USAF categorizes psychologists as either Clinical (AFSC 9186) or Behavioral Scientists (2675), which generally mirrors the two major clusters of psychologists in the American Psychological Association (clinical-practitioner versus scientists-academicians). Within the Behavioral Scientist specialty and in other related officer specialties (Scientific Managers - 2616 and Systems Acquisition Officers and Staff - 2724 and 2716), the utilization of psychologists varies by the mission of the organization (Air Training Command versus research in Air Force Systems Command or education in the USAF Academy and Air University). Thus, while the jobs of Behavioral Scientists in the Air Force are very diverse, the present USAF classification structure appears as realistic as those in the other services (and perhaps more so since in the USAF only clinicians are grouped in the medical area).

It is interesting to note that Scientific Managers (2616) in the Air Force are coded Occupational Group 5A in the DOD Occupational Conversion Manual, as are the other 26XX fields (Physicist - 2635, Chemical Research Officer - 2645, etc.). Only the Behavioral Scientists in the 26XX series are coded differently (as 5E with the USAF Clinical Psychologists and the various psychologists in the other services). This slight anomaly in the occupational classification system may be another bit of evidence which suggests the need for a different classification structure for Air Force Behavioral Scientists (the separate 2671, 2674, 2676 career ladder which was suggested earlier). Indeed, this lack of a clear and separate career progression for Behavioral Scientists may be one of the underlying causes of the lack of a behavioral science proponent (or single-point functional manager) discussed earlier.

FIGURE D1

DOD CLASSIFICATIONS FOR PSYCHOLOGISTS\*

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5E PSYCHOLOGISTS

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ARMY COMMISSIONED

42D	Psychological Evaluation
68S	Psychologist
68T	Health Services Research Psychologist
68U	Behavioral Science Associate

NAVY

0851	Clinical Pscyhologist
0852	Aerospace Experimental Psychologist
0854	Research Psychologist
2250	Behavioral Scientist

AIR FORCE

2675	Behavioral Scientist
9186	Clinical Psychologist

GENERAL SCHEDULE

0180	Psychology
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\* Taken from the DOD Occupational Conversion Manual, DOD 1313.1-M, OASD/MRA&L, 1982

FIGURE D2

MAJOR U.S. ARMY ORGANIZATIONS USING PSYCHOLOGISTS\*

Academy of Health Sciences  
Ft. Sam Houston, Texas

Army Aeromedical Research Laboratory  
Ft. Rucker, Alabama

Army Disciplinary Barracks  
Ft. Leavenworth, Kansas

Army Human Engineering Laboratory  
Aberdeen Proving Ground, Maryland

Army Medical Department Psychology, Surgeon General,  
The Pentagon

Army Medical Research and Development Command  
Ft. Detrick, Maryland

Army Medical Research Institute of Chemical Defense  
Aberdeen Proving Ground, Maryland

Army Organizational Effectiveness Center and School  
Ft. Ord, California

Army Research Institute for the Behavioral & Social Sciences  
Alexandria, Virginia

Army Research Institute of Environmental Medicine  
Natick, Maine

Army Soldier Support Center, Soldier Development Center  
Ft. Benjamin Harrison, Indiana

Letterman Army Institute of Research  
San Francisco, California

U.S. Army Military Academy, Department of Behavioral Sciences  
and Leadership, West Point

Walter Reed Army Institute of Research  
Washington, DC

\* Information from Military Psychology, APA Division 19, 1983



FIGURE D3

MAJOR U.S. NAVY ORGANIZATIONS USING PSYCHOLOGISTS\*

Medical Service Corps  
Bureau of Medicine and Surgery  
Washington, DC

Naval Aerospace Medical Research Laboratory  
NAS Pensacola, Florida

Naval Air Development Center  
Warminster, Pennsylvania

Naval Air Systems Command  
Washington, DC

Naval Biodynamics Laboratory  
New Orleans, Louisiana

Naval Health Research Center  
San Diego, California

Naval Medical Research Institute  
Bethesda, Maryland

Naval Postgraduate School  
Monterey, California

Naval Submarine Medical Research Laboratory  
NSB New London  
Groton, Connecticut

Navy Medical Command  
Washington, DC

Navy Personnel Research and Development Center  
San Diego, California

Navy Training Equipment Center  
Orlando, Florida

Office of Naval Research  
Arlington, Virginia

Training Analysis and Evaluation Group  
NTC Orlando, Florida

U.S. Naval Academy  
Annapolis, Maryland

\* Information from Military Psychology, APA Division 19, 1983

## MILITARY BEHAVIORAL SCIENTISTS OF ALLIED NATIONS

Because of exchange officer programs and other interactions, such as the Military Testing Association and APA, the psychological research and applications programs of the military services of our allies are very visible to some USAF Behavioral Scientists. Short summaries of the programs of some of our allies are given below.

CANADA. The military forces of Canada are combined under a single National Defence Headquarters (NDHQ) in Ottawa. Within the NDHQ are two agencies involved with research, personnel, and training programs equivalent to the USAF programs with 2675 officers; these are the Personnel Selection Branch (DPSRSC) and the occupational analysis function (DMOS3).

DPSRSC utilizes a force of about 93 Social and Behavioral Scientists as Personnel Selection Officers (PSO) to form a network responsible for both personnel research and application, as well as personnel counseling and the teaching of behavioral science. Collectively, these PSOs make up the Personnel Section (Behavioral Science) Branch of the Canadian Forces. A PSO is assigned to every CF base and is responsible for the following programs:

- a. The Life Skills Education Program (LSEP)
- b. The Life Quality Improvement Program (LQIP)
- c. Second Career Assistance Network (SCAN)
- d. Special training programs (e.g., the Youth Training Employment Program (YTEP))
- e. Second language training
- f. Educational upgrading and academic planning
- g. Professional socialization and motivation of officer groups
- h. Input on middle and senior management training, and
- i. Training of supervisory personnel in counseling techniques

The PSO also serves as a Behavioral Science Advisor to the local commander. Typically, the local base PSO will be a captain with at least a bachelors degree in one of the social sciences (sociology, psychology, etc.), and must have completed at least one tour in another military occupation before being selected as a PSO. After a 1-year internship under an experienced PSO, the new officer will attend a 4-week PSO course before being given an independent assignment. Base PSOs can call on the entire PSO network for advice with any problem and often get guidance and direction from their major command PSO (typically a major) or a Recruiting Zone Advisor (typically a senior captain or major).

Alternate assignments for more experienced PSOs include teaching at one of the military schools or as a research officer with the Canadian Forces Personnel Applied Research Unit (CFPARU) in Willowdale, Ontario, north of

Toronto. CFPARU has responsibility for a variety of research programs; current projects include:

- a. Personnel evaluation or performance measurement
- b. Leadership training
- c. Condition of service issues
- d. Attrition and retention
- e. Social trends and socio-demographic analysis
- f. Computerized counseling techniques and evaluation of counseling methods
- g. Attitudes and values and their affect on military organizations and personal satisfaction
- h. Service retirement or second career experiences, and
- i. Evaluation of sociological and psychological effects of introducing women into previously all male environments

About 10 percent of the PSOs are assigned to civilian universities where they are pursuing advanced degrees in psychology or sociology (some at US universities such as the University of Minnesota and the University of Maryland). Those earning doctoral degrees normally are assigned to CFPARU or as instructors in one of the military schools.

Finally, PSOs may also be on special assignment, such as the DPSRSC staff at NDHQ or as an exchange officer (currently with the USAFOMC, Randolph AFB TX). The head of the PSO branch is normally a lieutenant colonel (currently Lt Col Franck C. Pinch) who is assigned to NDHQ/DPSRSC. This officer functions as the functional manager of all CF Behavioral Scientists.

The PSOs of the CF have their own PSO professional association which meets in annual convention and for a dinner. The association publishes a PSO newsletter (see Figure D4) which keeps everyone informed of each other's activities, and serves to alert them to changes in their field. The association is one instrument to build esprit de corps which is an important part of their interactive network. The PSOs are also encouraged to participate in professional meetings and conferences, such as the Military Testing Association and the American Psychological Association. They also frequently present papers at the Psychology in the DOD Symposiums at the USAF Academy, and the International Occupational Analysts Workshop at the USAF Occupational Measurement Center.

NDHQ/DPSRSC is currently negotiating an additional exchange position with the USAF in terms of a USAF officer possibly being assigned to the CFPARU and a CF officer to the AFMPC/MPCYPT. This possible new exchange program would expand out-of-country assignment potential for USAF Behavioral Scientists (which are currently limited to those with experience in occupational analysis and CODAP).

# Personnel Selection Officers Association NEWSLETTER

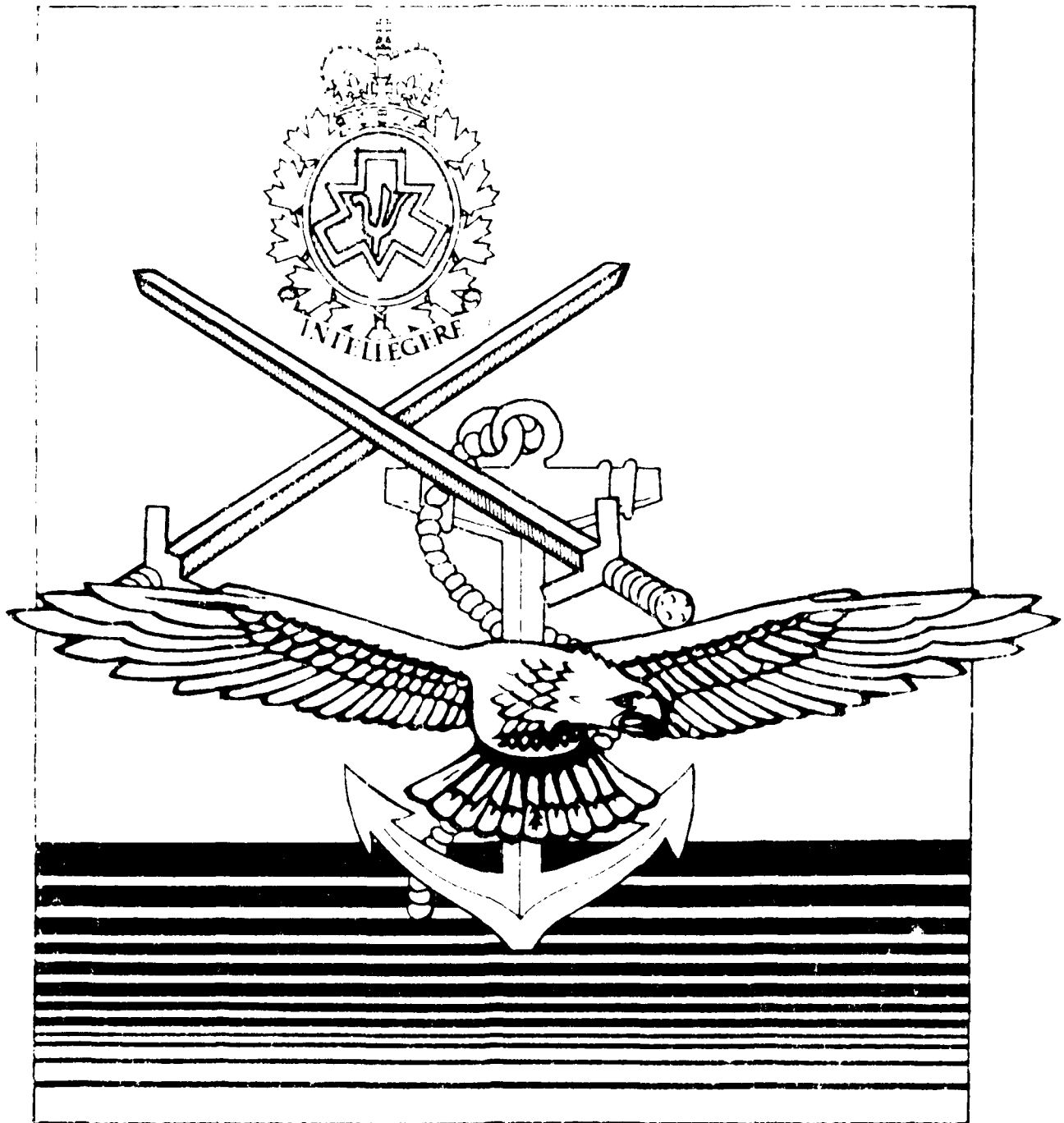


FIGURE D4. A typical cover for the Canadian Forces PSOA Newsletter. The PSO emblem is shown in the upper center, as a Phi crowned and wreathed in Maple leaves. The PSO motto "Intellegere" can be interpreted as "The power of understanding..."

The present USAF exchange is with the NDHQ occupational analysis program (DMOS3), which is responsible for analyzing data and drafting trade specifications for all military occupations. Currently, the USAF exchange officer (captain) is assigned as a team leader, with senior NCOs and warrant officer subject-matter experts for the occupation under study; each team builds their own inventory, administers it TDY to major CF bases, analyzes the data, and drafts a report with recommendations for changes in the manpower, personnel, and training system. Currently, one PSO is also assigned as an Occupational Analyst with DMOS3. Additional PSOs may be assigned this type of duty in the future to enhance the interface between the CF behavioral science community and the application of survey technology and analysis within the Directorate of Military Occupations.

The role of Behavioral Scientists in the Canadian Forces has recently undergone a major reexamination in a special NDHQ study. This study resulted in the rewriting of the trade standard for the specialty and may result in some expansion of PSO functions over the next few years.

ISRAEL DEFENCE FORCES (IDF). Psychologists in the IDF form the Department of Behavioral Sciences (MAMDA). The Chief Psychologist (and commander of MAMDA) now reports directly to the Adjutant General of the IDF. The department includes psychologists and other social scientists (sociologists, etc.) and is responsible for the following programs:

- a. Provide professional behavioral science advice on personnel matters to the Manpower Branch of the IDF
- b. Conduct attitude surveys
- c. Conduct a broad range of behavioral science research projects
- d. Selection of officers and personnel for special training and employment (assignments)
- e. Establishment of policies for providing psychological services to field units
- f. Professional development, technical supervision, and career management of all Behavioral Scientists in the IDF
- g. Providing services to any unit not having their own psychologist

The MAMDA is organized as a part of the IDF headquarters but also has responsibility for technical supervision and management of field psychologists assigned to individual units (see attached organization chart, Figure D5). The field psychologists are responsible for the following areas:

- a. Conducting field sociometric surveys
- b. Early identification of leadership and officer potential
- c. Conduct team-building seminars and workshops (sergeant to captain level)

- d. Selection of teams for combat units
- e. Conduct surveys for MAMDA
- f. Conducting interviews (and surveys) for feedback to commanders of:
  - (1) motivation and morale
  - (2) perceived adequacy of training and equipment
  - (3) confidence in leadership
  - (4) perceived operational readiness of a unit
- g. Providing other behavioral sciences services (such as advisor to the commanders)

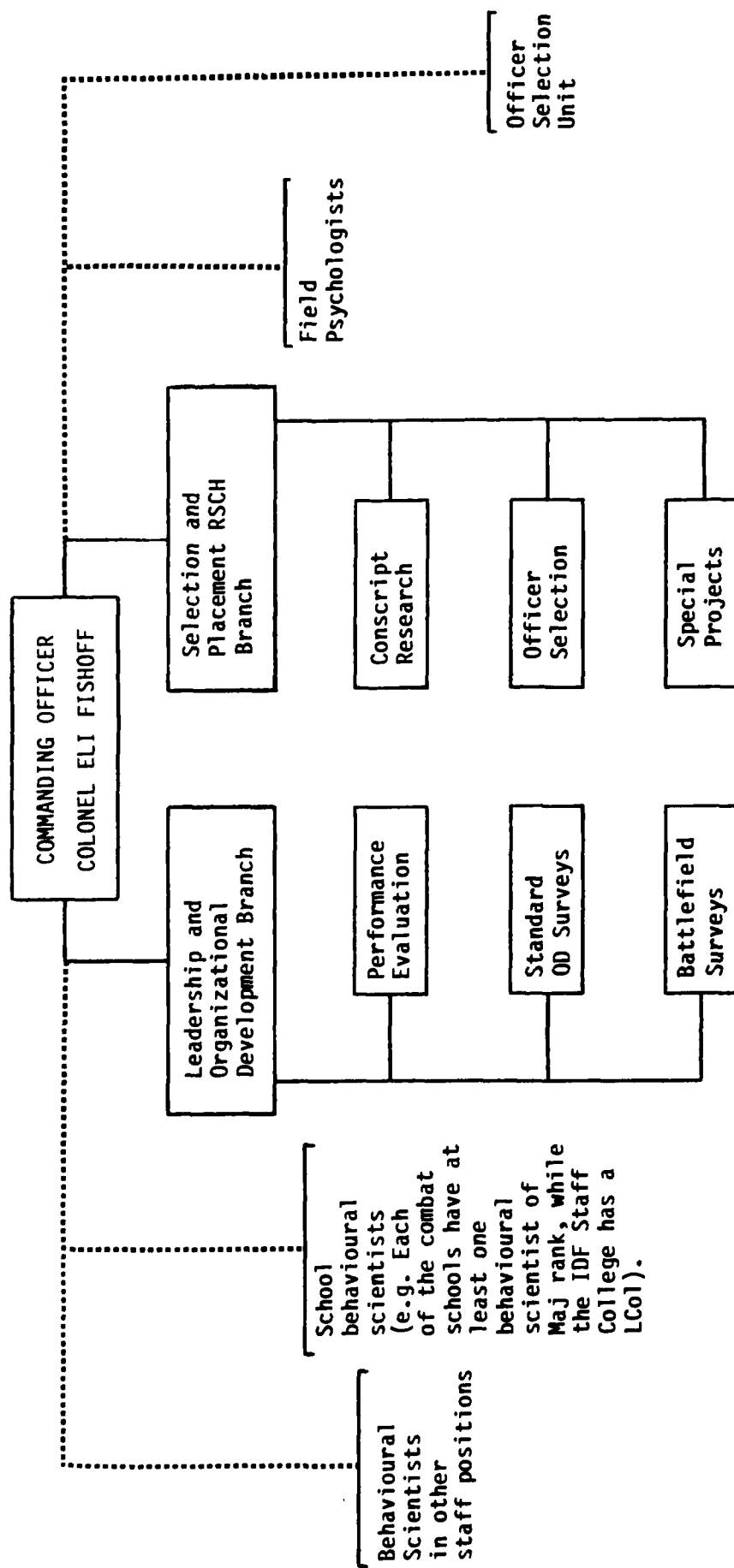
During military operations, field psychologists operate with their units and provide psychological screening and individual counseling for members of the unit. This type of front-line psychological services quickly restores many of the combat-stress casualties to their units and reinforces the unit cohesion of the division-brigade structure. By dealing with individuals they know during and garrison operations, the field psychologist has a greater probability of having a beneficial impact on those experiencing psychological difficulties under operational conditions.

MAMDA has two research sections, each headed by a Ph. D. lieutenant colonel Behavioral Scientist. Research programs include: performance evaluation, surveys to evaluate organizational climate, individual motivation, and morale, as well as special interest items for the IDF staff (retention, basic training evaluation, etc.). MAMDA research also focuses on long-term selection research for both officers and enlisted populations, including a psychological assessment battery involving tests of intellectual ability, personality, and biographical data. They are also researching assignment procedures and policies and selection for training programs.

The IDF also contracts for behavioral science research with universities and other institutions. Several of these researchers have briefed their results at international conventions (e.g., Dr. Dove Eden, Selection of Tank Crews in the IDF, APA Convention, Los Angeles, 1983). In addition, the MAMDA has recently become a member of the executive committee of the Military Testing Association.

Other allied military forces have had extensive contact with the IDF in the last 3 years. There was an exchange of visits between the Canadian PSO Branch and MAMDA chiefs in 1981 and 1982. Sweden commissioned the previous MAMDA commander to help the Swedish Army develop behavioral science cadre modelled after MAMDA. The Australian Army interacted with MAMDA to obtain information to develop a stronger field psychology role for the Australian Army's Psychology Corps. In return, senior IDF commanders have visited behavioral research applications units in each of these countries and in the United States.

FIGURE D5



Israel Defense Forces Department of Behavioral Sciences (MAMDA)

NOTE:  
 .....dotted line denotes responsibility for technical direction, professional development and career management.

AUSTRALIAN ARMED FORCES. Each of the three Australian armed forces operates fairly autonomously, and each has its own procedures and organizations for conducting psychological services and research. Each of the services also has a separate occupational analysis program, with the Royal Australian Air Force program being located in Melbourne, and those of the other services operating in the national capital, Canberra.

The Royal Australian Army has a separate Psychology Corps which is responsible for testing recruits and making selection decisions, behavioral science research, and field operations (similar to that of the Israel Defence Forces). They also operate a second career or "resettlement" program for those military members leaving the service (similar to but not as formal or extensive as the Canadian Forces Second Career Assistance Network). The RAA has a continuing program of interaction with allied military services which in 1983 included assignment of a captain to a year tour in the United States visiting behavioral science research and applications units.

The Royal Australian Air Force (RAAF) does not have a separate corps of Behavioral Scientists nor even an occupational category for psychologists. Most of the clinical and research functions are performed by civilian psychologists for the RAAF. Some tasks normally assigned to Behavioral Scientists in other services are usually performed by Training and Education officers in the RAAF. Such a T&E officer is typically assigned on exchange with the Air Force Human Resources Laboratory (Manpower and Personnel Research Division), Brooks AFB TX. The USAF exchange officer is assigned to the occupational analysis cell within HQ Support Command, Victoria Barracks, Melbourne.

Normally, the RAAF exchange officer returning to Australia is assigned to the National Defence Headquarters in Canberra, as part of the NDHQ staff or as the officer in charge of the OA cell in Melbourne. He is responsible for working through applications of the research he conducted while in the US and other recent MPT research results.

The Australian Armed Forces, particularly the RAAF, are very active in international cooperative efforts, including membership in the Military Testing Association (which met in Munich, Republic of West Germany, for their 1984 annual convention), and the Psychology in the DOD symposium, hosted every other year by the USAF Academy. In addition, RAAF and USAF exchange officers often participate in the Australian Psychological Association in its annual convention. In addition, the Australian Armed Forces have recently been involved in negotiations with the Canadian Defence Forces on the possible establishment of an exchange position between the Canadian PSO Branch and the RAA Psychology Corps.

### Summary

Behavioral Scientists are a very active force in the military services of allied nations, but their role, structure, and activity vary greatly by country and even by service within country. The most integrated program seems to



be that of Israel, where psychologists and sociologists are used to provide a variety of both research and field clinical services. The least integrated program is that of the Australian Armed Forces, where each service has its own program ranging from the Psychology Corps of the RA Army (modeled after the IDF) to the RAAF system where research and operational Human Resources Management programs are the responsibility of Education and Training officers. In all cases, however, there is an active interaction of military Behavioral Scientists of each country with those in the United States and other allied nations through exchange programs and participation in professional meetings and conferences.

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